ORDER NO. SD8001-1660

Service Manual

FM/AM Stereo Receiver

SA-303

[E], [EG], [XGH],
[XA], [XAL]

SA-303(K)

[E], [EG], [XGH]

SA-303

SA-303(K)

*The colors of this model include silver and black. The black type model is provided with (K) in the Service Manual.

Areas

- * [E] and [EG] are available in Scandinavia and European.
- * [XGH] is available in Holland.
- * [XA] is available in Asia, Latin America, Middle East and Africa.
- * [XAL] is available in Australia.

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TECHNICAL SPECIFICATIONS
[DIN 45 500]

Specifications are subject to change without notice for further improvement.

AMPLIFIER SECTION

20 Hz ～ 20 kHz continuous power output both channels driven	2 × 42W (4Ω), 2 × 40W (8Ω)
40 Hz ～ 16 kHz continuous power output both channels driven	2 × 42W (4Ω), 2 × 40W(8Ω)
1 kHz continuous power output both channels driven	2 × 50W(4Ω), 2 × 45W(8Ω)
Total harmonic distortion	
rated power at 20 Hz ～ 20 kHz	0.08% (4Ω), 0.04% (8Ω)
rated power at 40 Hz ～ 16 kHz	0.08% (4Ω), 0.04% (8Ω)
rated power at 1 kHz	0.04% (4Ω), 0.04% (8Ω)
half power at 20 Hz ～ 20 kHz	0.025% (8Ω)
half power at 1 kHz	0.009% (8Ω)
−26 dB power at 1 kHz	0.1% (4Ω)
50 mW power at 1 kHz	0.12% (4Ω)
Intermodulation distortion	
rated power at 250 Hz: 8 kHz= 4:1, 4Ω	0.08%
rated power at 60 Hz: 7 kHz=4:1, SMPTE, 8Ω	0.04%

Power bandwidth both channels driven, −3 dB		10 Hz ～ 35 kHz (4Ω)
Damping factor		10(4Ω), 20(8Ω)
Input sensitivity and impedance	PHONO	2.5 mV/47kΩ
	AUX	150 mV/27kΩ
	TAPE 2	150 mV/27kΩ
	TAPE 1 REC/PLAY	180 mV/27kΩ
PHONO maximum input voltage (1 kHz, RMS)		150 mV
S/N		
rated power (4Ω)	PHONO	70 dB (80 dB, IHF, A, 8Ω)
	AUX	88 dB (95 dB, IHF, A, 8Ω)
−26 dB power (4Ω)	PHONO	64 dB
	AUX	66 dB
50 mW power (4Ω)	PHONO	62 dB
	AUX	62 dB
Frequency response	PHONO	RIAA standard curve ±0.8 dB (30 Hz ～ 15 kHz)
	AUX	7 Hz ～ 45 kHz (−1 dB) ±0.2 dB(20 Hz ～ 20 kHz)

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

Tone controls	**BASS**	50 Hz, +10 dB ~ −10 dB
	TREBLE	20 kHz, +10 dB ~ −10 dB
High-cut filter		7 kHz, −6 dB/oct.
Loudness control (volume at −30 dB)		50 Hz, +9 dB
Output voltage and impedance	**TAPE, 1, 2 REC OUT**	150 mV
	TAPE 1 REC/PLAY	30 mV/82 kΩ
Channel balance, AUX 250 Hz ~ 6,300 Hz		±1.0 dB
Channel separation, AUX 1 kHz		55 dB
Headphones output level and impedance		420 mV/330Ω
Load impedance	**MAIN or REMOTE**	4Ω ~ 16Ω
	MAIN and REMOTE	8Ω ~ 16Ω

FM TUNER SECTION

Frequency range		88 ~ 108 MHz
Sensitivity	**S/N 30 dB**	1.9µV (300Ω), 1.3µV (75Ω)
	S/N 26 dB	1.7µV (300Ω), 1.2µV (75Ω)
	S/N 20 dB	1.5µV (300Ω), 0.9µV (75Ω)
IHF usable sensitivity		1.9µV (IHF '58)
IHF 46 dB stereo quieting sensitivity		22µV/75Ω
Total harmonic distortion	**MONO**	0.15%
	STEREO	0.3%
S/N	**MONO**	60 dB (75 dB, IHF)
	STEREO	58 dB (70 dB, IHF)
Frequency response		20 Hz ~ 15 kHz, +1 dB ~ −2 dB
		20 Hz ~ 14 kHz, +1.5 dB ~ −1.5 dB
Alternate channel selectivity		70 dB
Capture ratio		1.2 dB
Image rejection at 98 MHz		60 dB
IF rejection at 98 MHz		75 dB
Spurious response rejection at 98 MHz		82 dB
AM suppression		55 dB
Stereo separation	**1 kHz**	45 dB
	10 kHz	35 dB
Carrier leak	**19 kHz**	−30 dB (−40 dB, IHF)
	38 kHz	−50 dB (−50 dB, IHF)
Channel balance (250 Hz ~ 6,300 Hz)		±1.5 dB
Limiting point		1.2µV
Power bandwidth	**IF amplifier**	180 kHz
	FM demodulator	1000 kHz
Antenna terminals		300Ω (balanced)
		75Ω (unbalanced)

AM TUNER SECTION

Frequency range	525 ~ 1605 kHz
Sensitivity (S/N 20 dB)	30 µV, 300 µV/m
Selectivity	30 dB
Image rejection at 1,000 kHz	50 dB
IF rejection at 1,000 kHz	40 dB

GENERAL

Power consumption	430W
Power supply	AC 50 Hz/60 Hz, 110V/120V/220V/240V
Dimensions (W x H x D)	430 x 142 x 291 mm
	(16-15/16" x 5-19/32" x 11-15/16")
Weight	8.0 kg, (17.6 lb.)

TECHNISCHE DATEN

Spezifikationen können infolge von verbesserungen ohne Ankündigung geändert werden.

[DIN 45 500]

VERSTÄRKERTEIL

Dauerton-Ausgangsleistung bei 20 Hz ~ 20 kHz beide Kanäle ausgesteuert		2 x 42W (4Ω), 2 x 40W (8Ω)
Dauerton-Ausgangsleistung bei 40 Hz ~ 16 kHz beide Kanäle ausgesteuert		2 x 42W (4Ω), 2 x 40W (8Ω)
Dauerton-Ausgangsleistung bei 1 kHz beide Kanäle ausgesteuert		2 x 50W (4Ω), 2 x 45W (8Ω)
Gesamtklirrfaktor		
Nennleistung bei 20 Hz ~ 20 kHz		0.08% (4Ω), 0.04% (8Ω)
Nennleistung bei 40 Hz ~ 16 kHz		0.08% (4Ω), 0.04% (8Ω)
Nennleistung bei 1 kHz		0.04% (4Ω), 0.04% (8Ω)
halbe Nennleistung bei 20 Hz ~ 20 kHz		0.025% (8Ω)
halbe Nennleistung bei 1 kHz		0.009% (8Ω)
−26 dB Leistung bei 1 kHz		0.1% (4Ω)
50 mW Leistung bei 1 kHz		0.12% (4Ω)
Intermodulationsfaktor		
Nennleistung bei 250Hz: 8 kHz = 4:1, 4Ω		0.08%
Nennleistung bei 60 Hz: 7 kHz = 4:1, nach SMPTE, 8Ω		0.04%
Leistungsbandbreite beide Kanäle ausgesteuert bei −3 dB		10 Hz ~ 35 kHz (4Ω)
Dämpfungsfaktor		10 (4Ω), 20 (8Ω)
Eingangsempfindlichkeit und-impedanz		
Phono		2.5mV/47kΩ
Aux		150mV/27kΩ
Tape 2		150mV/27kΩ
Tape 1 Aufnahme/wiedergabe (TAPE 1 REC/PLAY)		180mV/27kΩ
MaximaleTA-Eingangsspannung (1 kHz, eff.)		150mV
Geräuschabstand		
Nennleistung (4Ω)	**Phono**	70 dB (80 dB, IHF, A, 8Ω)
	Aux	88 dB (95 dB, IHF, A, 8Ω)
−26 dB Leistung (4Ω)	**Phono**	64 dB
	Aux	66 dB
50 mW Leistung (4Ω)	**Phono**	62 dB
	Aux	62 dB
Frequenzgang	**Phono**	RIAA-Standardkurve
		±0.8 dB (30 Hz ~ 15 kHz)
	Aux	7 Hz ~ 45 kHz (−1 dB)
		±0.2 dB (20 Hz ~ 20 kHz)
Klangregler		
Baßregler (BASS)		50 Hz, +10 dB ~ −10 dB
Höhenregler (TREBLE)		20 kHz, +10 dB ~ −10 dB
Rauschfilter		7 kHz, −6 dB/Okt.
Gehörrichtige Lautstärkekorrektur (Loudness) (bei −30 dB Ausgangsleistung)		50 Hz, +9 dB
Ausgangsspannung und -impedanz		
Tape 1/2 Aufnahme (TAPE 1, 2 REC OUT)		150 mV
Tape 1 Aufnahme/Wiedergabe (TAPE 1 REC/PLAY)		30 mV/82 kΩ
Kanalabweichung (Aux, 250 Hz ~ 6300 Hz)		±1.0 dB
Übersprechdämpfung (Aux, 1 kHz)		55 dB
Kopfhörerpegel und -impedanz		420 mV/330Ω
Lautsprecherimpedanz	**MAIN oder REMOTE**	4Ω ~ 16Ω
	MAIN und REMOTE	8Ω ~ 16Ω

UKW-TUNERTEIL

Wellenbereich		88 ~ 108 MHz
Eingangsempfindlichkeit		
S/R 30 dB		1.9µV (300Ω), 1.3µV (75Ω)
S/R 26 dB		1.7µV (300Ω), 1.2µV (75Ω)
S/R 20 dB		1.5µV (300Ω), 0.9µV (75Ω)
Nutzempfindlichkeit nach IHF		1.9µV (nach IHF '58)
Stereoumschaltschwelle bei 46 dB nach IHF		22µV/75Ω
Gesamtklirrfaktor	**Mono**	0.15%
	Stereo	0.3%
Geräuschabstand	**Mono**	60 dB (75 dB nach IHF)
	Stereo	58 dB (70 dB nach IHF)
Frequenzgang		20 Hz ~ 15 kHz (+1 dB ~ −2 dB)
		20 Hz ~ 14 kHz (+1.5 dB ~ −1.5 dB)
Trennschärfe bei Störsender		70 dB
Einfangverhältnis		1.2 dB
Spiegelfrequenz-Dämpfung bei 98 MHz		60 dB
ZF-Dämpfung bei 98 MHz		75 dB
Ansprechdämpfung auf Nebenfrequenzen bei 98 MHz		82 dB
AM-Unterdrückung		55 dB
Übersprechdämpfung	**1 kHz**	45 dB
	10 kHz	35 dB
Trägerrest	**19 kHz**	−30 dB (−40 dB nach IHF)
	38 kHz	−50 dB (−50 dB nach IHF)
Kanalabweichung (250 Hz ~ 6300 Hz)		±1.5 dB
Begrenzereinsatz		1.2µV
Bandbreite	**ZF-Verstärker**	180 kHz
	UKW-Demodulator	1000 kHz
Antennenanschluß		300Ω (symmetrisch)
		75Ω (unsymmetrisch)

AM-TUNERTEIL

Wellenbereiche	525 ~ 1605 kHz
Eingangsempfindlichkeit (S/R 20 dB)	30µV, 300µV/m
Trennschärfe	30 dB
Spiegelfrequenz-Dämpfung bei 1000 kHz	50 dB
ZF-Dämpfung bei 1000 kHz	40 dB

ALLGEMEINE DATEN

Leistungsaufnahme	430 W
Netzspannung	Wechselstrom 50 Hz/60 Hz, 110V/120V/220V/240V
Abmessungen (BxHxT)	430 x 142 x 291 mm
Gewicht	8.0 kg

DONNEES TECHNIQUES Sujet à changment sans préaris.

[DIN 45 500]

SECTION AMPLIFICATEUR

Puissance de sortie continue de 20 Hz ~ 20 kHz, les deux canaux en circuit		2 x 42W (4Ω), 2 x 40W (8Ω)
Puissance de sortie continue de 40 Hz ~ 16 kHz, les deux canaux en circuit		2 x 42W (4Ω), 2 x 40W (8Ω)
Puissance de sortie continue à 1 kHz les deux canaux en circuit		2 x 50W (4Ω), 2 x 45W (8Ω)
Distorsion harmonique totale		
à puissance nominale (20 Hz ~ 20 kHz)		0.08% (4Ω), 0.04% (8Ω)
à puissance nominale (40 Hz ~ 16 kHz)		0.08% (4Ω), 0.04% (4Ω)
à puissance nominale (1 kHz)		0.04% (4Ω), 0.04% (8Ω)
à demi-puissance (20 Hz ~ 20 kHz)		0.025% (8Ω)
à demi-puissance (1 kHz)		0.009% (8Ω)
puissance de -26 dB à 1 kHz		0.1% (4Ω)
puissance de 50 mW à 1 kHz		0.12% (4Ω)
Distorsion d'intermodulation		
a puissance nominale à 250 Hz: 8 kHz= 4:1, 4Ω		0.08%
à puissance nominale à 60 Hz: 7 kHz= 4:1, SMPTE, 8Ω		0.04%
Réponse de fréquences les deux canaux en circuit, −3 dB		10 Hz ~ 35 kHz (4Ω)
Coefficient d'amortissement		10 (4Ω), 20 (8Ω)
Sensibilité et impédance d'entrée		
PHONO		2.5 mV/47 kΩ
AUX (AUX)		150 mV/ 27 kΩ
BANDE 2 (TAPE 2)		150 mV/27 kΩ
BANDE1, ENREGISTREMENT/LECTURE (TAPE 1 REC/PLAY)		180 mV/27 kΩ
PHONO (tension d'entrée maximum, 1 kHz RMS)		150 mV
Signal/Bruit		
à puissance nominale (4Ω)	**PHONO**	70 dB (80 dB, IHF, A.8Ω)
	AUX	88 dB (95 dB, IHF, A. 8Ω)
puissance de −26 dB (4Ω)	**PHONO**	64 dB
	AUX	66 dB
puissance de 50 mW (4Ω)	**PHONO**	62 dB
	AUX	62 dB
Réponse de fréquence	**PHONO**	Courbe nominale RIAA ±0.8 dB(30 Hz ~ 15 kHz)
	AUX	7 Hz ~ 45 kHz (−1 dB) ±0.2 dB (20 Hz ~ 20 kHz)
Réglage de la tonalité	**BASSES (BASS)**	50 Hz, +10 dB ~ −10 dB
	AIGUS (TREBLE)	20 kHz, +10 dB ~ −10 dB
Filtre coupe-hauts		7 kHz, −6 dB/oct.
Compensateur physiologique(volume à −30 dB)		50 Hz, +9 dB
Tension de sortie et impédance		
SORTIE ENREGISTREMENT/BANDE 1, 2 (TAPE 1, 2 REC OUT)		150 mV
ENREGISTREMENT/LECTURE BANDE 1 (TAPE 1 REC/PLAY)		30 mV/82 kΩ
Equilibrage des canaux, AUX 250 Hz ~ 6,300 Hz		±1.0 dB
Séparation des canaux, AUX 1 kHz		55 dB
Niveau de sortie des casques et impédance		420 mV/ 330Ω
Impédance de charge		
PRINCIPALE ou AUXILIAIRE (MAIN or REMOTE)		4Ω ~ 16Ω
PRINCIPALE et AUXILIAIRE (MAIN and REMOTE)		8Ω ~ 16Ω

SECTION SYNTONISATEUR FM

Gamme de fréquence		88 ~ 108 MHz
Sensibilité	**S/B 30 dB**	1.9μV (300Ω), 1.3μV (75Ω)
	S/B 26 dB	1.7μV (300Ω), 1.2μV (75Ω)
	S/B 20 dB	1.5μV (300Ω). 0.9μV (75Ω)
Sensibilité utilisable IHF		1.9μV (IHF '58)
Sensibilité stéréo au seuil de 46 dB, IHF		22 μV/75Ω
Distorsion harmonique totale	**MONO**	0.15%
	STEREO	0.3%
Signal/Bruit	**MONO**	60 dB (75 dB, IHF)
	STEREO	56 dB (70 dB, IHF)
Réponse de fréquence		20 Hz ~ 15 kHz, + 1 dB ~ −2 dB 20 Hz ~ 14 kHz, +1.5 dB ~ −1.5 dB
Sélectivitie alternée par canal		70 dB
Taux de capture		1.2 dB
Rejection d'image à 98 MHz		60 dB
Rejection FI à 98 MHz		75 dB
Rejection de réponse parasite à 98 MHz		82 dB
Suppression AM		55 dB
Séparation stéréophonique	**1 kHz**	45 dB
	10 kHz	35 dB
Fuite de porteuse	**19 kHz**	−30 dB (−40 dB, IHF)
	38 kHz	−50 dB (−50 dB, IHF)
Equilibrage de canaux (250 Hz ~ 6,300 Hz)		±1.5 dB
Point de limite		1.2μV
Largeur de band	**Amplificateur FI**	180 kHz
	Démodulateur FM	1000 kHz
Bornes d'antenne		300Ω (symétrique) 75 Ω (asymétrique)

SECTION SYNTONISATEUR AM

Gamme de fréquence	525 ~ 1605 kHz
Sensibilité (S/B 20 dB)	30 μV, 300 μV/m
Sélectivité	30 dB
Réjection d'image à 1,000 kHz	50 dB
Réjection FI à 1,000 kHz	40 dB

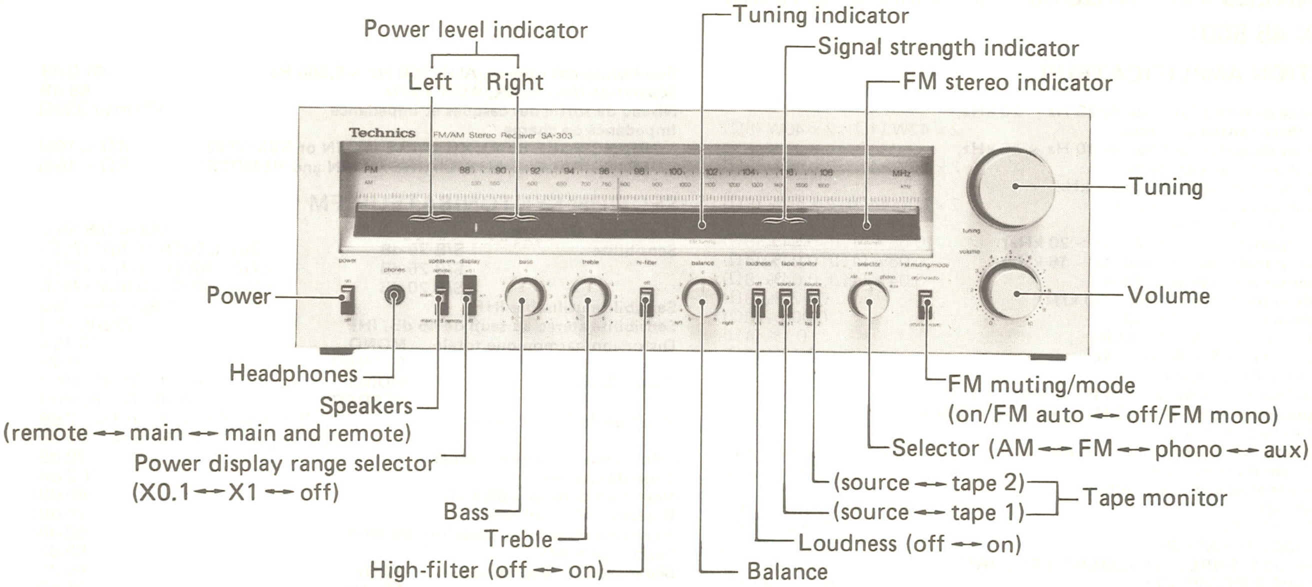
DIVERS

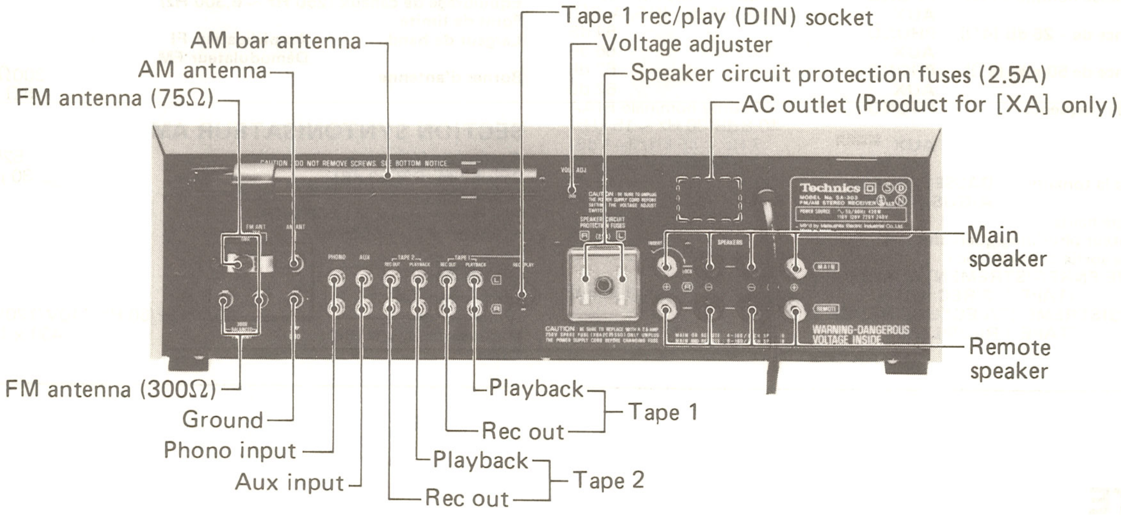
Consommation	430 W
Alimentaiton	CA 50 Hz/60 Hz, 110V/120V/220V/240V
Dimensions (L x H x Pr)	430 x 142 x 291 mm
Poids	8.0 kg

■ NOTE

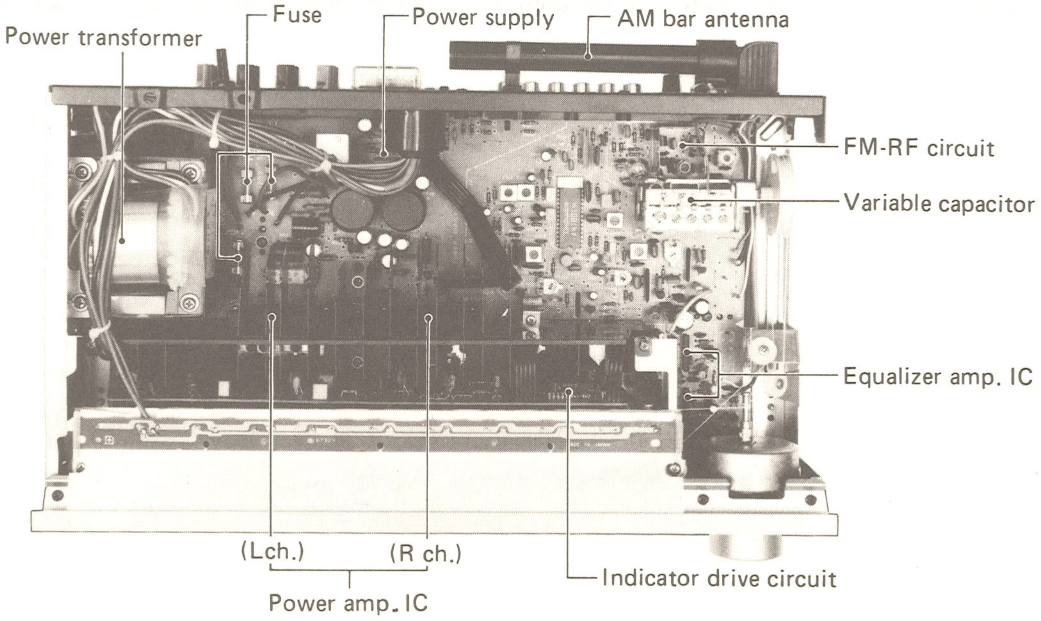
The unit is provided with the speaker circuit protection fuses at the right and left channels respectively. The fuse is to prevent the power IC from destruction, should the speaker terminals be short-circuited. Accordingly, if the unit fails to function upon completion of the speaker connections, check the speaker circuit protection fuses first of all for possible blowing.

LOCATION OF CONTROLS


Power level indicator
Left
Right
Tuning indicator
Signal strength indicator
FM stereo indicator
Technics
FM/AM Stereo Receiver SA-303
Tuning
Power
Volume
Headphones
Speakers
(remote ←→ main ←→ main and remote)
Power display range selector
(X0.1 ←→ X1 ←→ off)
Bass
Treble
High-filter (off ←→ on)
Balance
Loudness (off ←→ on)
(source ←→ tape 1)
(source ←→ tape 2)
Tape monitor
Selector (AM ←→ FM ←→ phono ←→ aux)
FM muting/mode
(on/FM auto ←→ off/FM mono)


Tape 1 rec/play (DIN) socket
Voltage adjuster
Speaker circuit protection fuses (2.5A)
AC outlet (Product for [XA] only)
AM bar antenna
AM antenna
FM antenna (75Ω)
Main speaker
Remote speaker
FM antenna (300Ω)
Ground
Phono input
Aux input
Playback
Rec out
Tape 1
Playback
Rec out
Tape 2

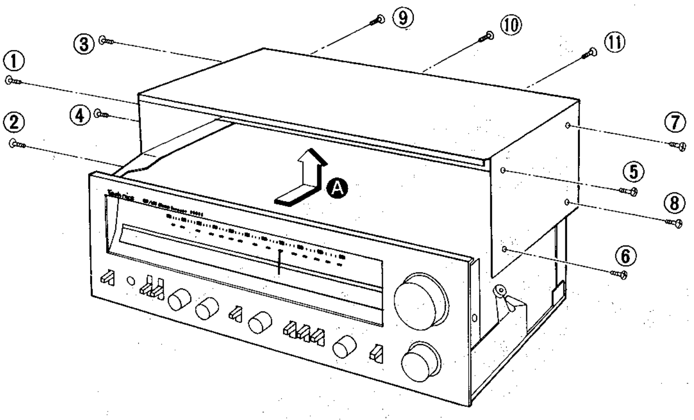
- **The products for destination [XA] is equipped with AC outlet.**


Power transformer
Fuse
Power supply
AM bar antenna
FM-RF circuit
Variable capacitor
Equalizer amp. IC
(Lch.)
(R ch.)
Power amp. IC
Indicator drive circuit

■ DISASSEMBLY INSTRUCTIONS

• How to remove the cabinet

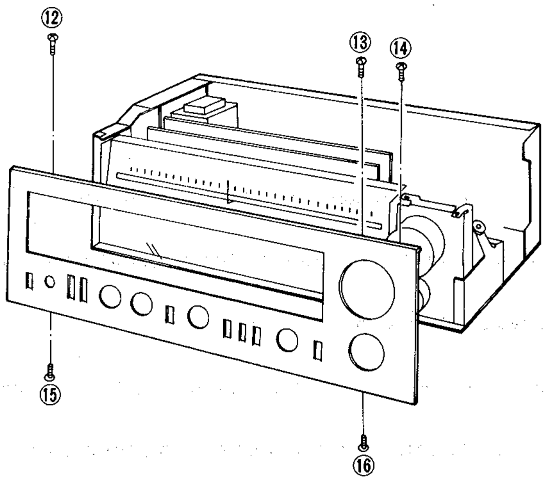
1. Remove the 8 setscrew (Fig. 1: ①～⑧) on the side and 3 setscrews (Fig. 1: ⑨～⑪) on the back of the cabinet.
2. Shift the cabinet backward and lift is upward. (Arrow 🅐 in Fig. 1)



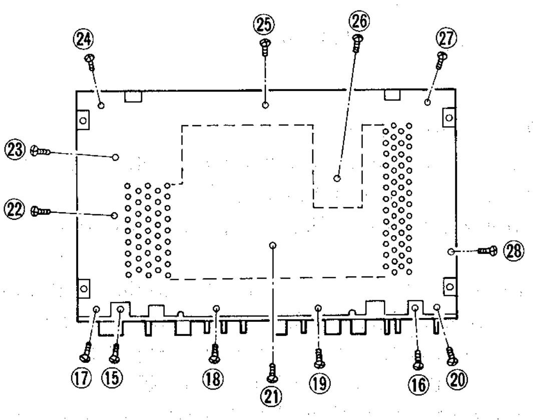
[Fig. 1]

• How to remove the front panel and the bottom board.

1. Remove the 5 setscrews (Fig. 2 : ⑫～⑯) of the front panel and remove the 2 setscrews (Fig. 3 : ⑱, ⑲) of the bottom board.
2. Pull the front panel outward from the front of the unit.
3. To remove the bottom board, remove the 12 setscrews (Fig. 3 : ⑰～㉘) of the bottom board.



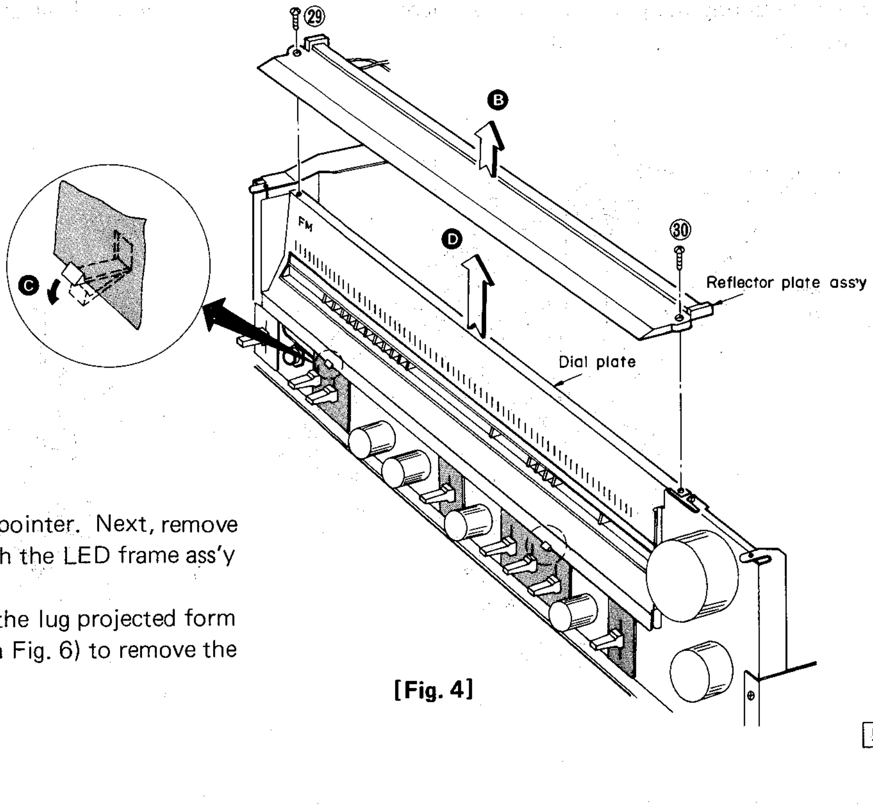
[Fig. 2]



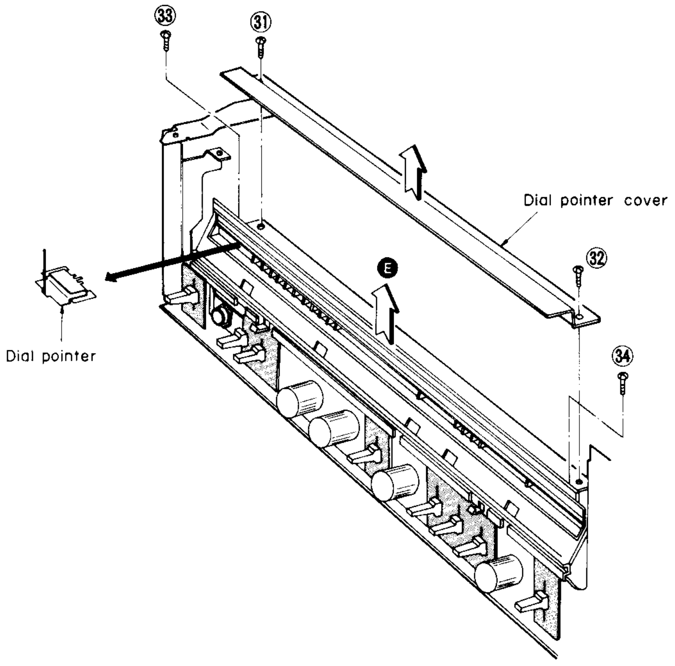
[Fig. 3]

• How to remove the LED indicator P.C.B.

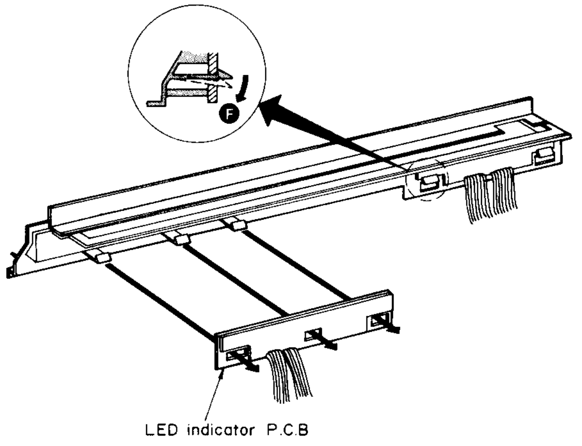
1. Remove the cabinet (Refer to the section "How to remove the cabinet)
2. Remove the 2 setscrews (Fig. 4 :㉙,㉚) to detach the reflector plate ass'y in the direction of the arrow 🅑 (Refer to Fig. 4).
3. The dial plate is secured with the two lugs projected from the LED frame ass'y.
   Press the lugs in the direction of the arrow 🅒 to detach the dial plate in the direction of the arrow 🅓.
4. Remove the 2 setscrews (Fig. 5 : ㉛ ㉜) to detach the dial pointer cover.
5. Remove the dial cord and pull out the dial pointer. Next, remove the 2 setscrews (Fig. 5 : ㉝, ㉞) to detach the LED frame ass'y in the direction of the arrow 🅔.
6. The LED indicator P.C.B. is secured with the lug projected form the LED frame. So, bend the down (🅕 in Fig. 6) to remove the LED indicator P.C.B.



[Fig. 4]


㉝
㉛
Dial pointer cover
Ⓔ
㉜
㉞
Dial pointer

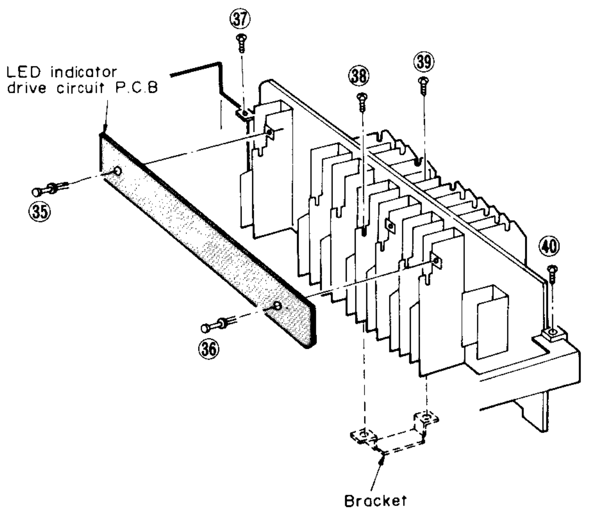
[Fig. 5]


Ⓕ
LED indicator P.C.B

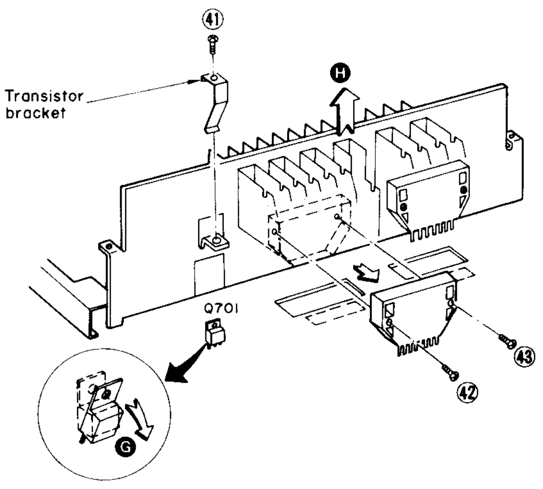
[Fig. 6]

- **How to remove the power IC**

1. Remove the cabinet and bottom board. (Refer to the sections "How to remove the cabinet" and "How to remove the front panel and the bottom board".)
2. Remove the 2 setscrews (Fig. 4 : ㉙ , ㉚) to detach the reflector plate ass'y in the direction of the arrow Ⓑ (Refer to Fig. 4).
3. Remove the 2 Lock pins (Fig. 7 : ㉟ , ㊱) to detach the LED indicator drive circuit P.C.B.
4. Remove the solder of power IC for both Lch and Rch.
5. Remove the transistor bracket setscrew (Fig. 8 : ㊶) to detach the transistor bracket. Unsolder the transistor Q701 and bend it down in the direction of the arrow Ⓖ.
6. Remove the 4 setscrews (Fig. 7 : ㊲～㊵) at the front chassis and bracket, and then remove the heat sink along with the power IC in the direction of the arrow Ⓗ.
7. Remove the 2 setscrews (Fig. 8 : ㊷～㊸) used to secure the power IC on the heat sink, and then pull the power IC.
8. When mounting the power IC, apply silicone compouned (or equivalent heat diffuser) to the back of power IC, and then follow the steps 1～7 reversely.


㊲
LED indicator
drive circuit P.C.B
㊳
㊴
㉟
㊵
㊱
Bracket

[Fig. 7]


㊶
Transistor
bracket
Ⓗ
Q701
Ⓖ
㊸
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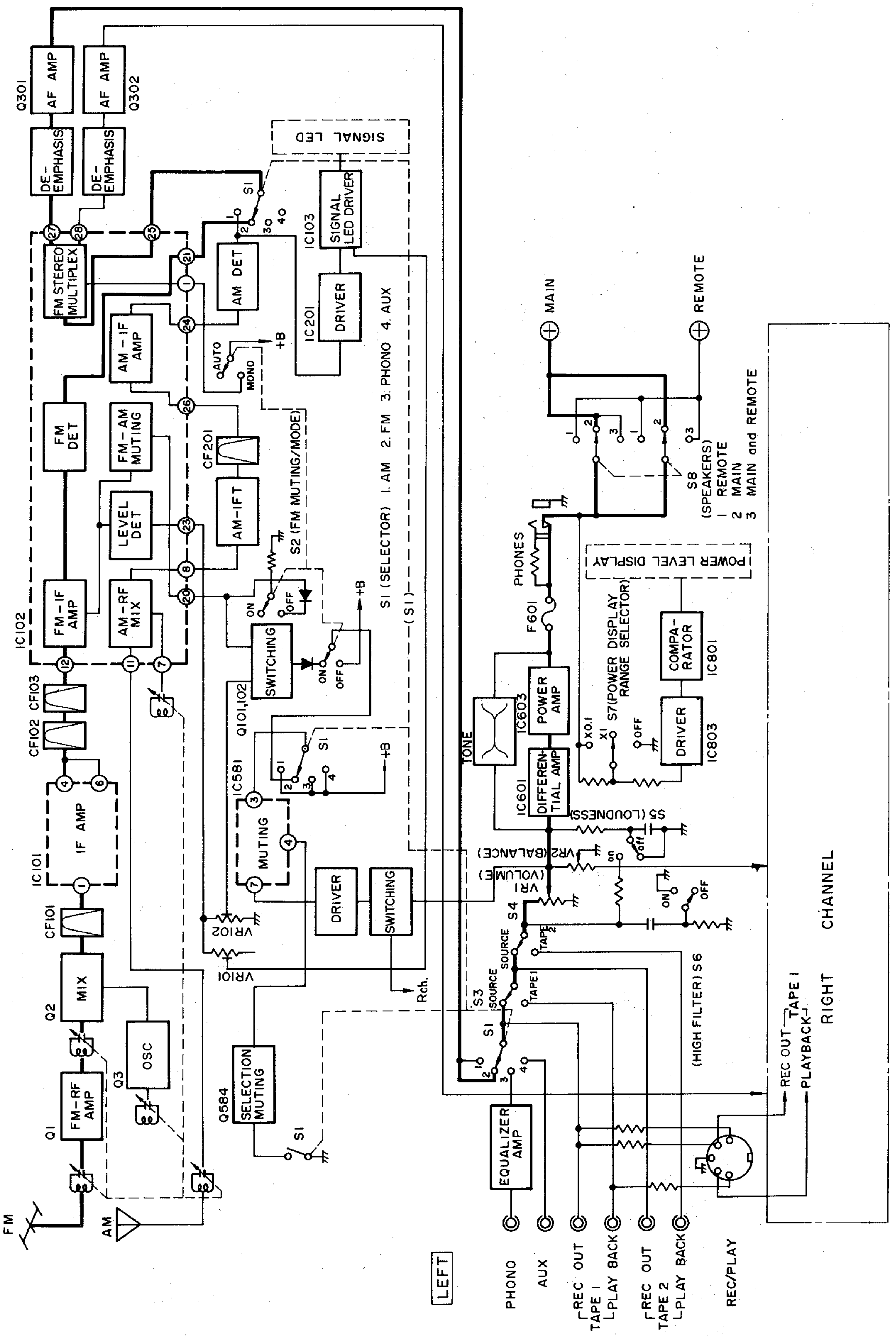
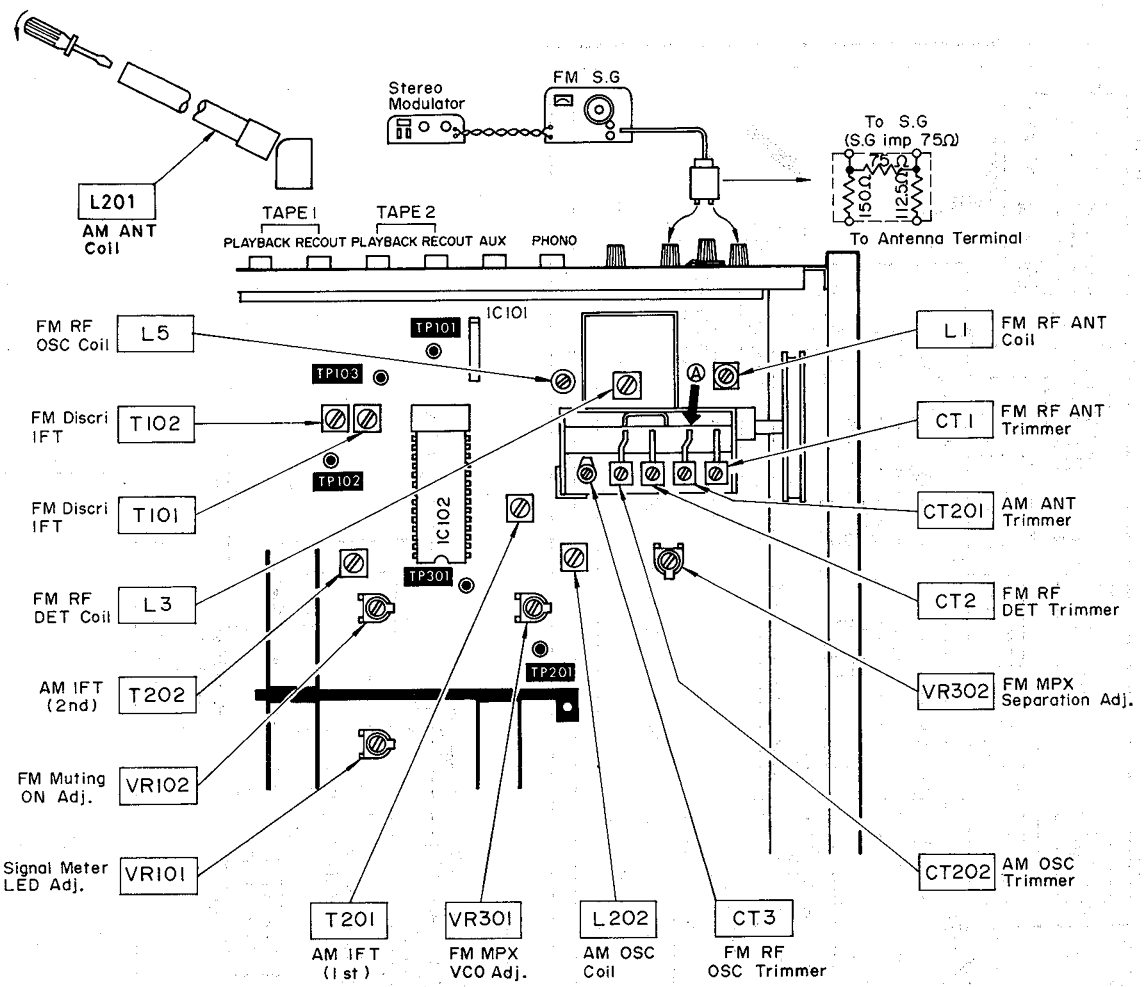
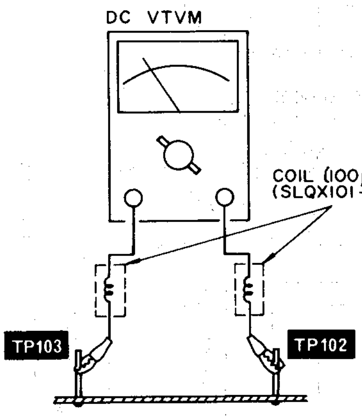
[Fig. 8]

■ BLOCK DIAGRAM

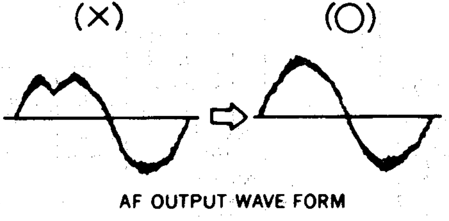

FM
AM
Q1
FM-RF AMP
Q2
MIX
Q3
OSC
CF101
IC101
IF AMP
CF102
CF103
IC102
FM-IF AMP
FM DET
AM-RF MIX
LEVEL DET
FM-AM MUTING
AM-IF AMP
FM STEREO MULTIPLEX
AM DET
AM-IFT
CF201
DE-EMPHASIS
AF AMP
Q301
Q302
SIGNAL LED
IC103
SIGNAL LED DRIVER
IC201
DRIVER
AUTO
MONO
+B
S2 (FM MUTING/MODE)
ON
OFF
SWITCHING
Q101,102
S1 (SELECTOR) 1. AM 2. FM 3. PHONO 4. AUX
(S1)
IC581
MUTING
DRIVER
SWITCHING
VR101
VR102
Rch.
Q584
SELECTION MUTING
S1
S3
SOURCE
TAPE1
S4
TAPE2
EQUALIZER AMP
VR1 (VOLUME)
VR2 (BALANCE)
S5 (LOUDNESS)
(HIGH FILTER) S6
IC601
DIFFEREN-TIAL AMP
TONE
IC603
POWER AMP
F601
PHONES
S7 (POWER DISPLAY RANGE SELECTOR)
X0.1
X1
IC803
DRIVER
IC801
COMPA-RATOR
POWER LEVEL DISPLAY
MAIN
REMOTE
S8 (SPEAKERS)
1 REMOTE
2 MAIN
3 MAIN and REMOTE
RIGHT CHANNEL
REC OUT ┐TAPE I
PLAYBACK┘
LEFT
PHONO
AUX
┌REC OUT
TAPE 1
└PLAY BACK
┌REC OUT
TAPE 2
└PLAY BACK
REC/PLAY

■ ADJUSTMENT POINTS

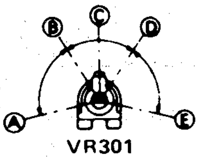

L201
AM ANT Coil
Stereo Modulator
FM S.G
To S.G (S.G imp 75Ω)
75Ω
150Ω
112.5Ω
To Antenna Terminal
TAPE 1
TAPE 2
PLAYBACK
RECOUT
PLAYBACK
RECOUT
AUX
PHONO
IC101
TP101
TP103
TP102
IC102
TP301
TP201
Ⓐ
L5
FM RF OSC Coil
T102
FM Discri IFT
T101
FM Discri IFT
L3
FM RF DET Coil
T202
AM IFT (2nd)
VR102
FM Muting ON Adj.
VR101
Signal Meter LED Adj.
L1
FM RF ANT Coil
CT1
FM RF ANT Trimmer
CT201
AM ANT Trimmer
CT2
FM RF DET Trimmer
VR302
FM MPX Separation Adj.
CT202
AM OSC Trimmer
T201
AM IFT (1st)
VR301
FM MPX VCO Adj.
L202
AM OSC Coil
CT3
FM RF OSC Trimmer


DC VTVM
COIL (100μH) (SLQX101 – 2D)
TP103
TP102

[Fig. 10]
(Abb. 1)

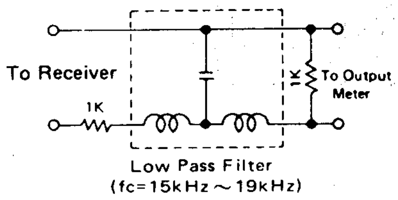

(×)
(O)
AF OUTPUT WAVE FORM

[Fig. 11]
(Abb. 2)



A – B, D – E: Stereo OFF Position.
B – D: Stereo ON Position (Indicator Lighting).
C: Adjust Point of Pilot Circuit.

[Fig. 12]
(Abb. 3)


To Receiver
1K
1K
To Output Meter
Low Pass Filter
(fc=15kHz ~ 19kHz)

[Fig. 13]
(Abb. 4)

■ ADJUSTMENT INSTRUCTIONS — ENGLISH

Notes:

1. Band selector switch . . . . {AM (AM Alignment) / FM (FM Alignment)
2. FM muting & mode switch . . . off/mono
3. Fix the bottom board to chassis before adjustment.
4. Maintain line voltage at rated voltage.
5. 300Ω FM dummy antenna.
6. Output of signal generator should be no higher than necessary to obtain an output reading.
7. Adjust the antenna coil (L201) position by using a screw driver so that it is at approximately 25 degrees to the rear panel.

	AM/FM SIGNAL GENERATOR		DIAL SETTING	INDICATOR (VTVM or SCOPE)	ADJUSTMENT POINTS	REMARKS
	CONNECTION	FREQUENCY				
	AM ADJUSTMENT					
1	High side through 0.001μF to **AM** antenna trimmer terminal. (point A). Common to chassis.	450kHz (30% Mod. with 400Hz)	Point of non-inter-ference	Connect AC VTVM or scope to "OUTPUT" terminals.	T201 (1st IFT) T202 (2nd IFT)	Adjust the input frequency and adjustment points so that the output becomes maximum.
2	Fasion loop of several turns of wire and radiate signal into loop of receiver	600kHz (30% Mod. with 400Hz)	600kHz	Connect AC VTVM or scope to "OUTPUT" terminals.	L202 (OSC Coil) L201 (ANT Coil)	Adjust for maximum output. Adjust ferrite core of L201 by screw drive.
3	Fashion loop of several turns of wire and radiate signal into loop of receiver.	1500kHz (30% Mod. with 400Hz)	1500kHz	Connect AC VTVM or scope to "SPEAKER" terminal	CT202 (OSC Trimmer) CT201 (ANT Trimmer)	Adjust for maximum output. Repeat steps 2 and 3.
	FM IF ADJUSTMENT					
4		No-Signal	Point of non-inter-ference	Connect DC VTVM to TP102, TP103 terminals. (Refer to fig. 10)	T101 (Discriminator IFT)	• FM muting/mode switch to on/auto" position • Adjust T101 core so that voltage measured in signal mode is 0V in 300 mV range
	FM RF ADJUSTMENT					
5	Connect to FM 300Ω antenna terminal through 300Ω FM dummy antenna.	90MHz (100% Mod. with 400Hz) weak input	90MHz	Connect scope to "SPEAKER" terminal	L5 (OSC Coil) L3 (RF DET Coil) L1 (ANT Coil)	• Add weak input so that noise is included in the output wave form • Make the adjustment so that the output wave form is vertically symmetrical. (Fig. 11) • Repeat the steps (5) and (6) until the frequency correctly matches the dial scale
6		106MHz (100% Mod. with 400Hz) weak input	106MHz	Connect scope to "SPEAKER" terminal	CT3 (OSC Trimmer) CT2 (RF DET Trimmer) CT1 (ANT Trimmer)	
	FM MONO DISTORTION ADJUSTMENT					
7	Connect to FM 300Ω antenna terminal through 300Ω FM dummy antenna.	100MHz (100% Mod. with 400Hz) weak input	100MHz	Connect DC VTVM to between TP102 and TP103 through choke coil. Refer to fig. 10 Connect scope to "SPEAKER" terminal.	T101 (Discriminator IFT)	• FM muting/mode switch to "on/auto" position • Add week input so that noise is included in the output wave form. • Make the tuning so that the output wave form is vertically symmetrical (Fig. 11) • Adjust T101 core so that voltage measured in signal mode is 0V in 300mV range.
8	Connect to FM 300Ω antenna terminal through 300Ω FM dummy antenna. Apply 16dB (6.3μV) to receiver.	100MHz (100% Mod. with 400Hz)	100MHz	Connect distortion meter to "SPEAKER" terminals through low pass filter. Refer to fig. 13.	T102 (Discriminator IFT)	• Set the FM muting/mode switch to "on/auto" and then check steps in (4) and (7) • If it is deflected, re-adjust T101. • Adjust T102 core so that distortion of right and left channels are minimized. • Repeat steps (4) (7) and (8).
	FM MUTING LEVEL ADJUSTMENT					
9	Connect to FM 300Ω antenna terminal through 300Ω FM dummy antenna. Apply 16dB (6.3μV) to receiver. (Product for [XA] only apply 12dB to receiver)	100MHz (100% Mod. with 400Hz)	100MHz	Connect AC VTVM or scope to "SPEAKER" terminals.	VR102 (MUTING LEVEL)	FM muting/mode switch to "on/auto". Adjust so that output can be obtained.
	SIGNAL METER LED LIGHT LEVEL ADJUSTMENT					
10	Connect to FM 300Ω antenna terminal through 300Ω FM dummy antenna.	100MHz (100% Mod. with 400Hz)	100MHz	Connect scope to "SPEAKER" terminal	VR101 (LED LIGHT LEVEL)	• With weak input signal (noise produced) at 100MHz (100% Mod. with 400Hz) applied, make tuning so that the upper and lower wave forms are symmetrical. • With the input set at 45dB (signal generator at 57dB), adjust VR101 so that all the signal strength LED's light up.

	FM MPX V.C.O. ADJUSTMENT	
	Using frequency counter	Using alternate system
11	1 100MHz Non-modulated mono signal applied to set. 2 FM muting/mode switch to "on/FM auto". 3 Connect frequency counter to **TP301** through resistor (100kΩ). 4 Adjust **VR301** to 19kHz, ±30Hz.	1 Apply stereo signal from generator or stereo station to receiver. 2 Adjust **VR301** until stereo indicator lights up. Cement arm of **VR301** as shown in fig. 12.
	SEPARATION ADJUSTMENT	
	PREPARATIONS	ADJUSTING PROCEDURE
12	1 Add 100MHz, 1kHz, 30% pilot 10% modulation, 60dB stereo signal to the receiver. 2 Connect AC VTVM or scope to "SPEAKER" terminal through low pass filter. Refer to fig. 13.	1 FM muting/mode switch to "on/auto". 2 Adjust **VR302** so that **R** output is minimized when stereo modulator is in **L** (Lch. modulation) mode and that **L** output is minimized in **R** mode.

■ ANWEISUNGEN FÜR ABGLEICHUNG — DEUTSCH

(Für Deutschland)

Anmerkungen:

1. Bereichsschalter · · · · · · · · · · · · · {AM (MW Abgleich) / FM (UKW Abgleich)
2. FM Muting/Mode Schalter . . . . .off/mono
3. Netzspannung auf ihren Sollwert halten.
4. UKW-Kunstantenne, 300 ohm.
5. Der Ausgang des Meßsenders darf nicht höher sein als unbedingt notwendig für eine gute Ablesung.
6. Nittels eines Schraubenziehers die Stellung der Antennenspule (L201) so einstellen, daß, sie gegen die Rückenplatte einen Winkel von ca., 25° macht.
7. Vor Einstellungen, die Bodenplatte des Chassis befestigen.

	MW/UKW MESSENDER		FREQUENZ STELLUNG DES TUNER	ANZEIGEGEIRÄT (Röhrenvoltmeter oder Oszillograph ozw. Klirrfactor-Meßgerät)	ABGLEICHS-PUNKTE	BEMERKUNGEN
	ANSCHLUSS	FREQUENZ				
	MW-ABGLEICH					
1	Heißes Ende des meßsenders über einen 0.001μF. Kondensator an den AM Antenneneingang schließen. Kaltes Ende an Masse.	450kHz (400Hz Modulat., 30%)	Kein Empfang	Wechselstrom Röhrenvoltmeter oder Oszillograph über den Ausgang. "SPEAKER" schließen.	T201 (1. IFT) T202 (2. IFT)	Die Eingangsfrequenz und die Einstellungspunkte so adustieren, daß der Ausgang den maximalen Wert erreicht.
2	Das Meßsendersignal induktiv in den Tuner speisen. Hierzu behelfsmäßig eine Rahmenantenne fertigen und an den Eingang schließen.	600kHz (400Hz Modulat., 30%)	600kHz	Wechselstrom Röhrenvoltmeter oder Oszillograph über den Ausgang. "SPEAKER" schließen.	L202 (Osc. Spule) L201 (Ant. Spule)	Auf max. Ausgang abgleichen. Den Ferritkern von L201 mit einem Schraubendreher justieren.
3	Das Meßsendersignal induktiv in den Tuner speisen. Hierzu behelfsmäßig eine Rahmenantenne fertigen und an den Eingang schließen.	1500kHz (400Hz Modulat., 30%)	1500kHz	Wechselstrom Röhrenvoltmeter oder Oszillograph über den Ausgang "SPEAKER" scheißen.	CT202(Osc. Trimmer) CT201(Ant. Trimmer)	Auf max. Ausgang abgleichen. Schritt (2) und (3) sing zu wiederholen.
	UKW-ZF-ABGLEICH					
4		Kein Signal	Kein Empfang	Elektronisches (GS-Voltmeter an Klemmen TP102 und TP103 anschließen.(Vgl. Abb. 1)	T101 (Diskriminator IFT)	1. FM muting/mode-Schalter auf "on/auto". 2. Den Kern von T101 so justieren, daß die gemessene Spannung im signallosen Modus 0V im 300mV Bereich beträgt.
	UKW-HF-ABGLEICH					
5	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen.	87.5MHz (400Hz Modulat., 100%)	87.5MHz (Frequenz Min.)	Oszillograph über den Ausgang "SPEAKER" schließen.	L5 (Osc. Spule)	1. FM Muting-Schalter auf OFF stellen. 2. Auf max. Ausgang abgleichen.
6	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen.	90MHz (400Hz Modulat., 100%)	90MHz	Oszillograph über den Ausgang "SPEAKER" schließen.	L3 (1. Det. Spule) L1 (Ant. Spule)	1. Einen schwachen Eingang geben, bei den Geräusch in der Ausgangswellenform enthalten wird. 2. So einstellen, daß die Ausgangswellenform vertikal symmetrisch wird. (Abb 2) 3. Die Einstellung von (5). (6) und (7) wiederhoten, bis die Frequenz mit der Skala übereinstimmt.
7	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen.	106MHz (400Hz Modulat., 100%)	106MHz	Oszillograph über den Ausgang "SPEAKER" schließen.	CT3 (Osc. Trimmer) CT2 (RF DET Trimmer) CT1 (Ant. Trimmer)	

	MW/UKW MESSENDER ANSCHLUSS	MW/UKW MESSENDER FREQUENZ	FREQUENZ STELLUNG DES TUNER	ANZEIGEGEIRAT (Röhrenvoltmeter oder Oszillograph ozw. Klirrfactor-Meßgerät)	ABGLEICHS-PUNKTE	BEMERKUNGEN
	ABGLEICH AUF MIN. VERZERRUNG IN STELLUNG UKW- MONO					
8	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen.	100MHz (400Hz Modulat., 100%)	100MHz	Elektronisches (GS-Voltmeter an Klemmen TP102 und TP103 anschließen. (Vgl. Abb. 1) Oszillograph über den Ausgang "SPEAKER" scheißen	T101 (Diskriminator IFT)	1. FM muting/mode-Schalter auf "on/auto" 2. Einen schwachen Eingang geben, bei den Geräusch in der Ausgangswellenform enthalten wird. 3. So einstellen daß die Ausgangswellenform vertikal symmetrisch wird (Abb. 2)
9	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen. Meßsender auf 16dB einstellen.	100MHz (400Hz Modulat., 100%)	100MHz	Klirrfaktormesser an die Ausgangsklemme durch Tiefpaß filter an Ausgangsanschlüsse des Gerätes anschließen (Vgl. Abb. 4)	T102 (Diskriminator IFT)	4. Den kern von T101 so justieren, daß die gemessene Spannung im signallosen Modus 0V im 300mV Bereich beträgt. 5. FM muting/mode-Schalter auf "on/auto" stellen dann in signalloser Mode den Schritt (4) und (7) feststellen. 6. Wenn Abweichung vorliegt. A (primäre Seite) von T101 wieder einstellen 7. T102 (B) kern für minimale verzerrung der rechten und linken Kanäle justieren. 8. Schritt (4), (8) und (9) sing zu wiederholen.
	UKW-MUTING-ABGLEICH					
10	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen. Meßsender auf 16dB einstellen.	100MHz (400Hz Modulat., 100%)	100MHz	Röhrenvoltmeter oder Oszillograph über den Lautsprecher schließen.	VR102 (UKW-Muting)	Muting Schalter auf "ON" stellen. So einstellen, daß ein Ausgang zu vernehmen ist.
	ABGLEICHEN DES SIGNALMETER-LED (LICHTERZEUGENDE DIODE)-ANZEIGERS					
11	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen.	100MHz (400Hz Modulat., 100%)	100MHz	Oszillograph über den Ausgang "SPEAKER" schließen.	VR101 (Meter volume)	1. Bei schwachem Eingangssignal (Geräusch erzeugt) von 100MHz (100% moduliert bei 400Hz), so abstimmen, daß die obere und untere Wellenform symmetrisch werden. 2. Mit Eingang auf 45dB (Signalgenerator auf 57dB) gestellt, den einstellbaren Widerstand VR102 so regulieren, daß alle LED (Leuchtdioden) des Signalmeters aufleuchten.

UKW-STEREO-DEKODER-ABGLEICH

	Unter Verwendung eines Zählers	Alternativ-Meßmethode
12	1. Unmoduliertes Mono-Signal 100MHz in das Gerät speisen. 2. FM Muting/mode-Schalter auf "on/auto" stellen. 3. Zähler über einen Widerstand 100kΩ an **TP301** schließen. 4. **VR301** auf 19kHz ± 30Hz einstellen.	1. Stereosignal entweder von einem Stereogenerator. oder einem Sender einspeisen. 2. **VR301** so einstellen, bis die Stereolampe auf leuchtet. Schleifer von **VR301** sichern, wie in Abb. 3 gezeigt.
	KANALTRENNUNG-ABGLEICH	
13	1. Das gerät auf 100MHz, 1kHz, Pilot 10% Modulation, 60dB Stereosignal einstellen. 2. Wechselstrom-Röhrenvoltmeter oder, Oszillograph durch Tiefpaß filter (fc = 15 ~ 19KHz) an Ausgangsanschlüsse des Gerätes anschließen. (Abb. 4)	3. FM muting/mode-Schalter auf "on/auto". 4. **VR302** auf minimale Anzeige des **R**-Ausgangs bei Stereomodulator in **L**-(L-Kanalmodulation) Modus, und auf minimale Anzeige des **L**-Ausgangs in **R**-Modus abgleichen.

INSTRUCTIONS D'ALIGNMENT — FRANÇAIS

Notes:

1. Sélecteur de gamme ············ { AM (Alignement AM) / FM (Alignement FM)
2. Commutateur de silencieux/mode. . . off/mono
3. Conservel la tension du secteur à la tension nominale.
4. Antenne fictive FM 300Ω.
5. Le signal du générateur ne doit pas être plus élevé qu'il n'est nécessaire à obtenir une lecture en sortie.
6. Régler la position de la bobine (L201) de l'antenne en utilisant un tournevis de telle sorte qu'alle soit environ à 25 degrés de la plaque arrière.
7. Fixer la plaque de base au châssis avant le réglage.

	AM/FM GENERATEUR BRANCHEMENT	AM/FM GENERATEUR FREQUENCE	AIGUILLE SUR LE FREQUENCE	INDICATEUR (VOLTMETRE ELECTRONIQUE OSCILLOSCOPE OU DISTORSIONMETRE)	POINTS DE REGLAGE	OBSERVATIONS
			ALIGNEMENT AM			
1	Côté chaud à travers 0.001μF, sur le trimmer de l'antenne AM. commum an shássis.	450kHz (modulé à 30% par 400Hz)	Point sans signal	C.A. voltmètre électronique ou oscilloscope sur prise de sortie de l'appareil.	T201 (1 transfo FI) T202 (2 transfo FI)	Régler la fréquence d'entrée et les points de réglage de telle sorte que la sortie devienne maximale.
2	Faire une boucle de quelgues tours et rayonner le signal dans le cadre du l'ampli-tuner.	600kHz (modulé à 30% par 400Hz)	600kHz	C.A. voltmètre électronique ou oscilloscope sur prise de sortie de l'appareil.	L202 (bobine OSC) L201 (bobine ANT)	Régler au maximum de signal de sortie. Régler le noyau ferrite de L201 à l'aide d'un tournevis.
3	Faire une boucle de quelgues tours et rayonner le signal dans le cadre du l'ampli-tuner.	1500kHz (modulé à 30% par 400Hz)	1500kHz	C.A. voltmètre èlectronique ou oscilloscope sur prise de sortie de l'appareil.	CT202 (trimmer OSC) CT201 (trimmer ANT)	Régler au maximum de signal de sortie. Recommencez les étapes (2) et (3).
	ALIGNEMENT FI-FM					
4		Sans signal	Point sans signal	Brancher le voltmètre électronique à C.C. aux bornes TP102 et TP103. (Voir fig. 10)	T101 (transfo FI discri)	1. Commutateur de silencieux sur "on/auto". 2. Régler le noyau T101 de telle sorte que le voltage mesuré dans le mode sans signal, soti de 0V dans la gamme des 300mV.
	ALIGNEMENT RF-FM					
5	Branchez sur la prise d'antenne FM à traves une antenne fictive FM.	90MHz (modulè à 100% par 400Hz)	90MHz	Oscilloscope sur prise de sortie du tuner	L5 (bobine OSC) L3 (1er détecteur) L1 (bobine ANT)	1. Appliquer une entrée faible de telle sorte que le parasite soit compris dans la forme de l'onde de sortie. 2. Faire le réglage de telle sorte que le forme de l'onde de sortie soit verticalement symértrique. (Voir fig. 11) 3. Refaire les réglages (5) et (6) jusqu' à ce que la fréquence corresponde correctement avec l'échells du cadran.
6	Branchez sur la prise d'antenne FM à travers une antenne fictive FM.	106MHz (modulé à 100% par 400Hz)	106MHz	Oscilloscope sur prise de sortie du tuner.	CT3 (trimmer OSC) CT2 (trimmer DET) CT1 (trimmer ANT)	
	REGLAGE DE LA DISTORSION FM EN MONO					
7	Branchez sur la prise d'antenne FM à travers une antenne fictive FM.	100MHz (modulé à 100% par 400Hz)	100MHz	Brancher le voltmétre électronique ä c.c. aux bornes TP102 et TP103 Oscilloscope sur prise de sortie du làmpli-tuner.	T101 (Transfo FI discri.)	1. Commutateur de silencieux sur "on/auto". 2. Appliquer une entrée faible de telle sorte que le parasite soit compris dans la forme de l'onde de sortie. 3. Faire le réglage de telle sorte que le forme de l'onde de sortie soit verticalement symértrique. (Voir fig. 11)
8	Branchez sur la prise d'antenne FM à traves une antenne fictive FM. Nivena de sortie du générateur 16 dB.	100MHz (modulé à 100% par 400Hz)	100MHz	Distorsiométre sur prise de sortie, par lintermédiaire du filtre passe-bas (fig. 13)	T102 (Transfor FI discri.)	4. Régler le noyau T101 de telle sorte que le voltage mesuré dans le mode sans signal, soti de 0V dans la gamme des 300mV. 5. Placer la commutateur Sourdine FM/Mode sur "on/auto" et vérifier l'étape (4) et (7) dans un mode sans signal. 6. S'il est déplacé,, re-régler A (côté primaire) de T101. 7. Régler le noyou T102 (B) de telle sorte que la distorsion des canaux droit et gauche soit la plus faible. 8.Recommencez les étapes (4), (7) et (8).
9	Branchez sur la prise d'antenne FM à travers une antenne fictive FM. Niveau de sortie du générateur 16dB.	100MHz (modulé à 100% par 400Hz)	100MHz	Branchez un voltmètre électronique ou un oscilloscope sur les bornes de haut-parleur de l'ampli-tuner.	VR101	1. Commutateur de silencieux sur "ON" 2. Régler pour obtenir une lecture en sortie.

	AM/FM GENERATEUR		AIGUILLE SUR LE FREQUENCE	INDICATEUR (VOLTMETRE ELECTRONIQUE OSCILLOSCOPE OU DISTORSIONMETRE)	POINTS DE REGLAGE	OBSERVATIONS
	BRANCHEMENT	FREQUENCE				
	ABGLEICHEN DES SIGNLMETER-LED (LICHTERZEUGENDE DIODE)-ANZEIGERS					
10	Branchez sur la prise d'antenne FM à traves une antenne fictive FM.	100MHz (modulé à 100% par 400Hz)	100MHz	Oscilloscope sur prise de sortie du tuner.	VR101	1. Après avoir appliqué un faible signal d'entrée (bruit produit) de 100 MHz (100% modulé à 400Hz), accorder de telle sorte queles formes d'onde supérieure et inférieure soient symmétriques. 2. Après avoir réglé l'entrée sur 45dB (oscilloscope à 57dB), régler la VR102 de telle sorte que toutes les LED de puissance de signal, s'allument.

ALIGNEMENT DU PILOTE MULTIPLEX FM

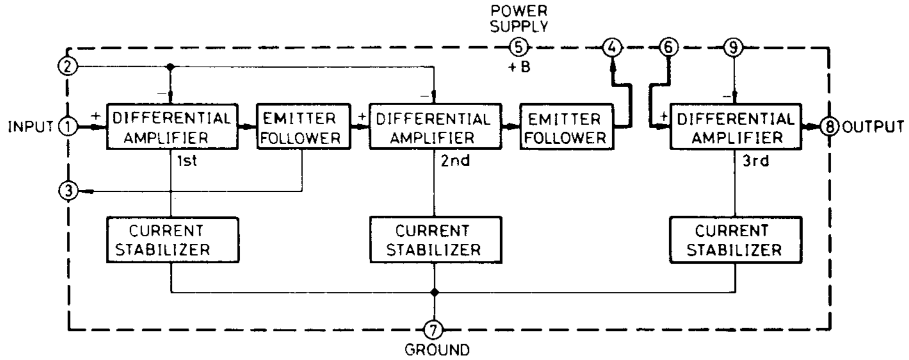
	Avec un fréquencemétre	Par un outre système
11	1. Signal mono 100MHz non modulé appliqué à l'appariel. 2. Commutateur de silencieux sur "on/auto". 3. Branchez le fréquencemètre sur **TP301** à travers une résistance de 100kΩ. 4. Régler **VR301** sur 19kHz ± 30Hz.	1. Appliquez à l'appareil un sinal stéréo provenant d'un générateur ou de la réception d'un émetteur. 2. Régler **VR301** jusqu à ce que l'indicateur de stéréophonic s'allume. Collez le curseur de **VR301** comme indiquè sur la fig. 12.

REGLAGE DE LA SEPARATION DES CANAUX

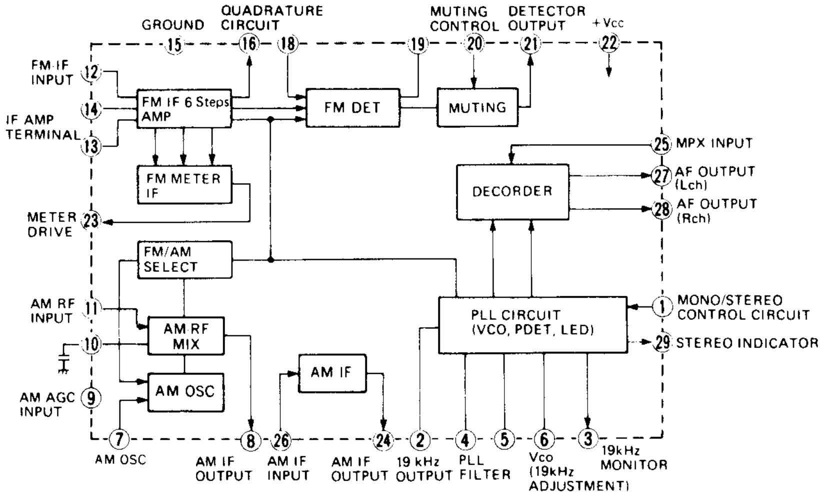
	Préparations	Procédure de réglage
12	1. Ajouter 100MHz, 1kHz, Modulation, pilote 10%, signal stéréophonique 60dB, à làpparell. 2. Brancher un voltmètre électronique C.A. ou un oscilloscope aux bornes de sortie, par l'intermédiaire du filtre passe-bas (fc = 15 ~ 19kHz).	1. Commutateur de silencieux fur "on/auto". 2. Régler **VR302** de telle sorte que la sortie droite soit minimale quand la commande d'accord stéréophonique est dans le mode gauche (modulation du canal gauche) et que la sortie gauche soit minimale dans mode droit.

■ BLOCK DIAGRAM OF IC'S

*This is the basic block diagram of the inside circuit of IC. In an actual circuit, there may be sometimes idle terminals or some different functions other than the basic circuit.


POWER SUPPLY
⑤
+B
④
⑥
⑨
②
INPUT ①
DIFFERENTIAL AMPLIFIER
1st
EMITTER FOLLOWER
DIFFERENTIAL AMPLIFIER
2nd
EMITTER FOLLOWER
DIFFERENTIAL AMPLIFIER
3rd
⑧ OUTPUT
③
CURRENT STABILIZER
CURRENT STABILIZER
CURRENT STABILIZER
⑦
GROUND

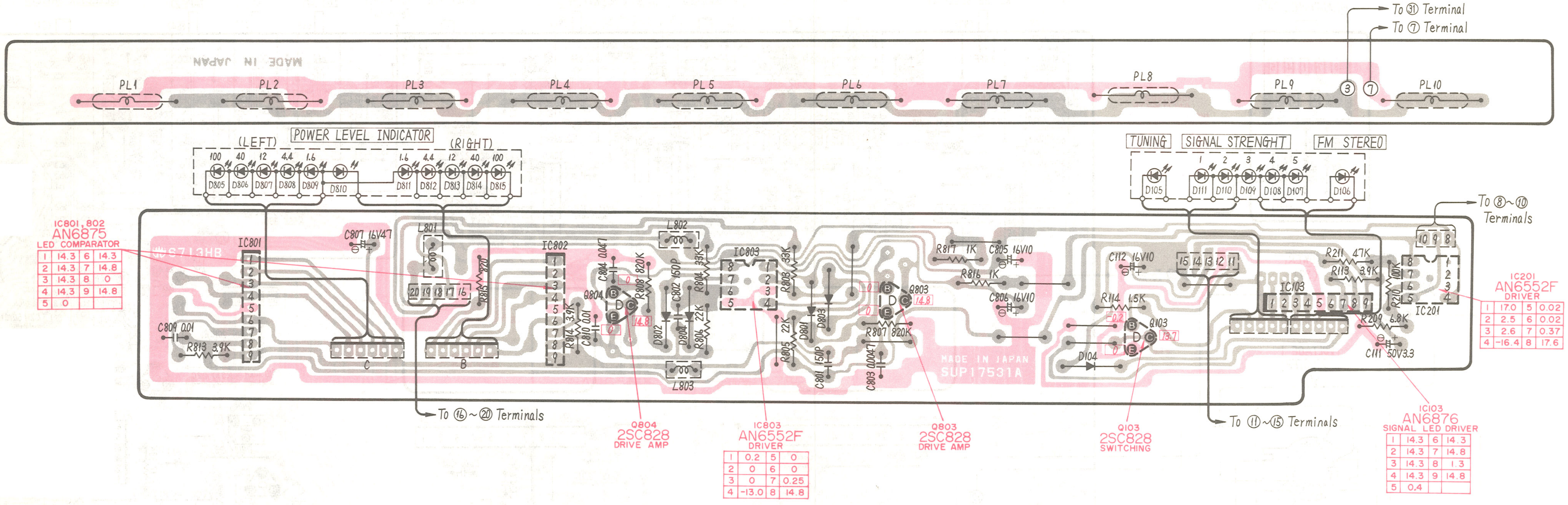
IC101 (AN278)
FM IF amplifier


GROUND 15
QUADRATURE CIRCUIT 16
18
19
MUTING CONTROL 20
DETECTOR OUTPUT 21
+Vcc 22
FM IF INPUT 12
14
IF AMP TERMINAL 13
FM IF 6 Steps AMP
FM DET
MUTING
FM METER IF
METER DRIVE 23
25 MPX INPUT
DECORDER
27 AF OUTPUT (Lch)
28 AF OUTPUT (Rch)
FM/AM SELECT
AM RF INPUT 11
10
AM RF MIX
AM OSC
AM AGC INPUT 9
AM IF
PLL CIRCUIT (VCO, PDET, LED)
1 MONO/STEREO CONTROL CIRCUIT
29 STEREO INDICATOR
7 AM OSC
8 AM IF OUTPUT
26 AM IF INPUT
24 AM IF OUTPUT
2 19 kHz OUTPUT
4 PLL FILTER
5
6 Vco (19kHz ADJUSTMENT)
3 19kHz MONITOR

IC102 (AN7001SW)
AM Converter, FM IF amplifier, FM detector & MPX

■ PRINTED CIRCUIT BOARD WIRING VIEW (LED driver circuit P.C.B.)

🟥 Earth (Ground) Lines


To ③ Terminal
To ⑦ Terminal
MADE IN JAPAN
PL1
PL2
PL3
PL4
PL5
PL6
PL7
PL8
PL9
PL10
③
⑦
POWER LEVEL INDICATOR
(LEFT)
(RIGHT)
100
40
12
4.4
1.6
D805
D806
D807
D808
D809
D810
D811
D812
D813
D814
D815
TUNING
SIGNAL STRENGHT
FM STEREO
1
2
3
4
5
D105
D111
D110
D109
D108
D107
D106
To ⑧~⑩ Terminals
IC801
C807 16V47
L801
L802
IC802
IC803
C809 0.01
R813 3.9K
R814 3.9K
C810 0.01
C804 0.047
R808 820K
C802 150P
R804 33K
R806 22K
R803 33K
R805 22K
C801 150P
C803 0.0047
D801
D802
D803
D804
Q804
Q803
R817 1K
R816 1K
C805 16V10
C806 16V10
R807 820K
L803
C112 16V10
R114 1.5K
Q103
D104
IC103
R211 4.7K
R113 3.9K
R209 6.8K
R210
IC201
C111 50V3.3
MADE IN JAPAN
SUP17531A
C
B
To ⑯~⑳ Terminals
To ⑪~⑮ Terminals
Q804
2SC828
DRIVE AMP
Q803
2SC828
DRIVE AMP
Q103
2SC828
SWITCHING

IC801, 802
AN6875
LED COMPARATOR

1	14.3	6	14.3
2	14.3	7	14.8
3	14.3	8	0
4	14.3	9	14.8
5	0		

IC803
AN6552F
DRIVER

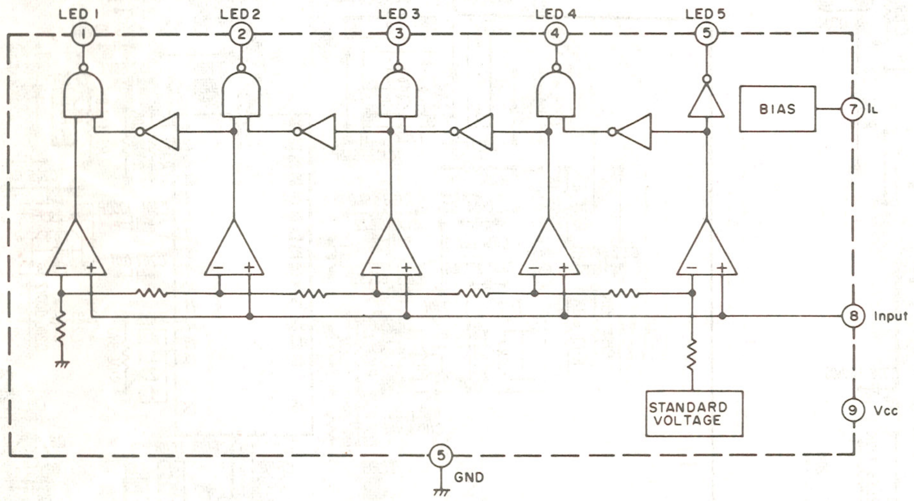
1	0.2	5	0
2	0	6	0
3	0	7	0.25
4	-13.0	8	14.8

IC103
AN6876
SIGNAL LED DRIVER

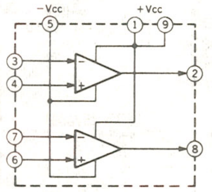
1	14.3	6	14.3
2	14.3	7	14.8
3	14.3	8	1.3
4	14.3	9	14.8
5	0.4		

IC201
AN6552F
DRIVER

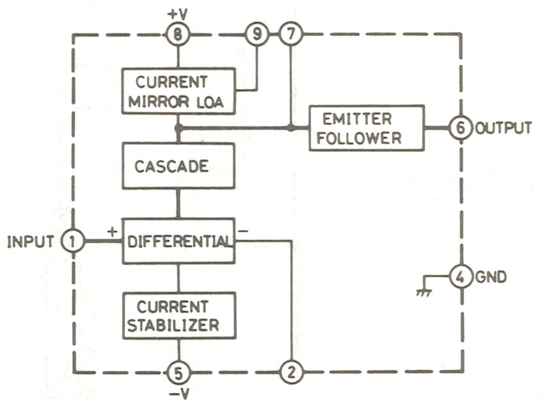
1	17.0	5	0.02
2	2.5	6	0.02
3	2.6	7	0.37
4	-16.4	8	17.6


LED 1
LED 2
LED 3
LED 4
LED 5
BIAS
⑦ IL
⑧ Input
⑨ Vcc
STANDARD VOLTAGE
⑤ GND

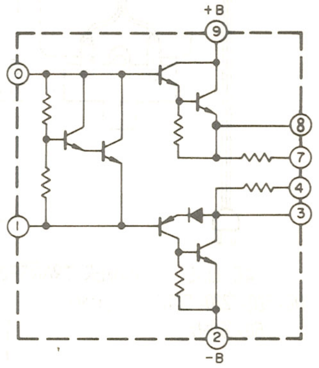
IC103 (AN6876)
Signal LED driver



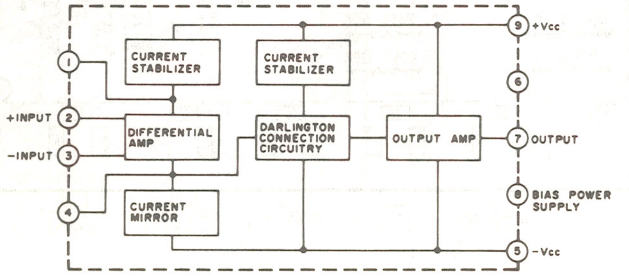
IC201, 803 (AN6552F)
Operation amplifier


+V
CURRENT MIRROR LOA
CASCADE
EMITTER FOLLOWER
⑥ OUTPUT
INPUT ①
DIFFERENTIAL
④ GND
CURRENT STABILIZER
-V

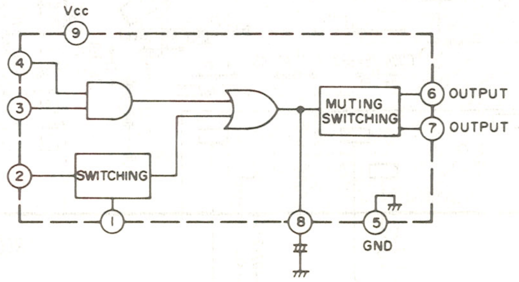
IC601, 602 (AN7060F)
Differential amplifier



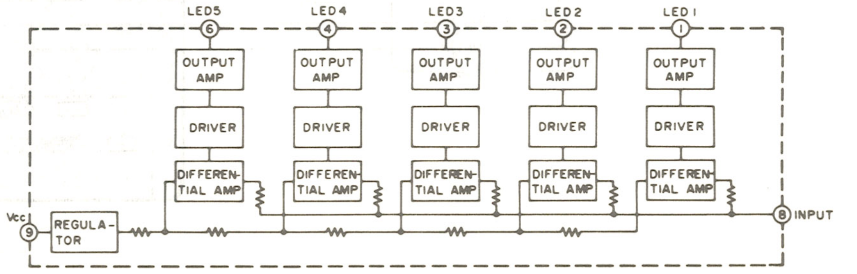
IC603, 604 (SVISTK1039)
Power amplifier


CURRENT STABILIZER
CURRENT STABILIZER
⑨ +Vcc
+INPUT ②
-INPUT ③
DIFFERENTIAL AMP
DARLINGTON CONNECTION CIRCUITRY
OUTPUT AMP
⑦ OUTPUT
⑧ BIAS POWER SUPPLY
CURRENT MIRROR
⑤ -Vcc

IC401, 402 (SVITA7322P)
Equalizer amplifier


Vcc
MUTING SWITCHING
⑥ OUTPUT
⑦ OUTPUT
SWITCHING
GND

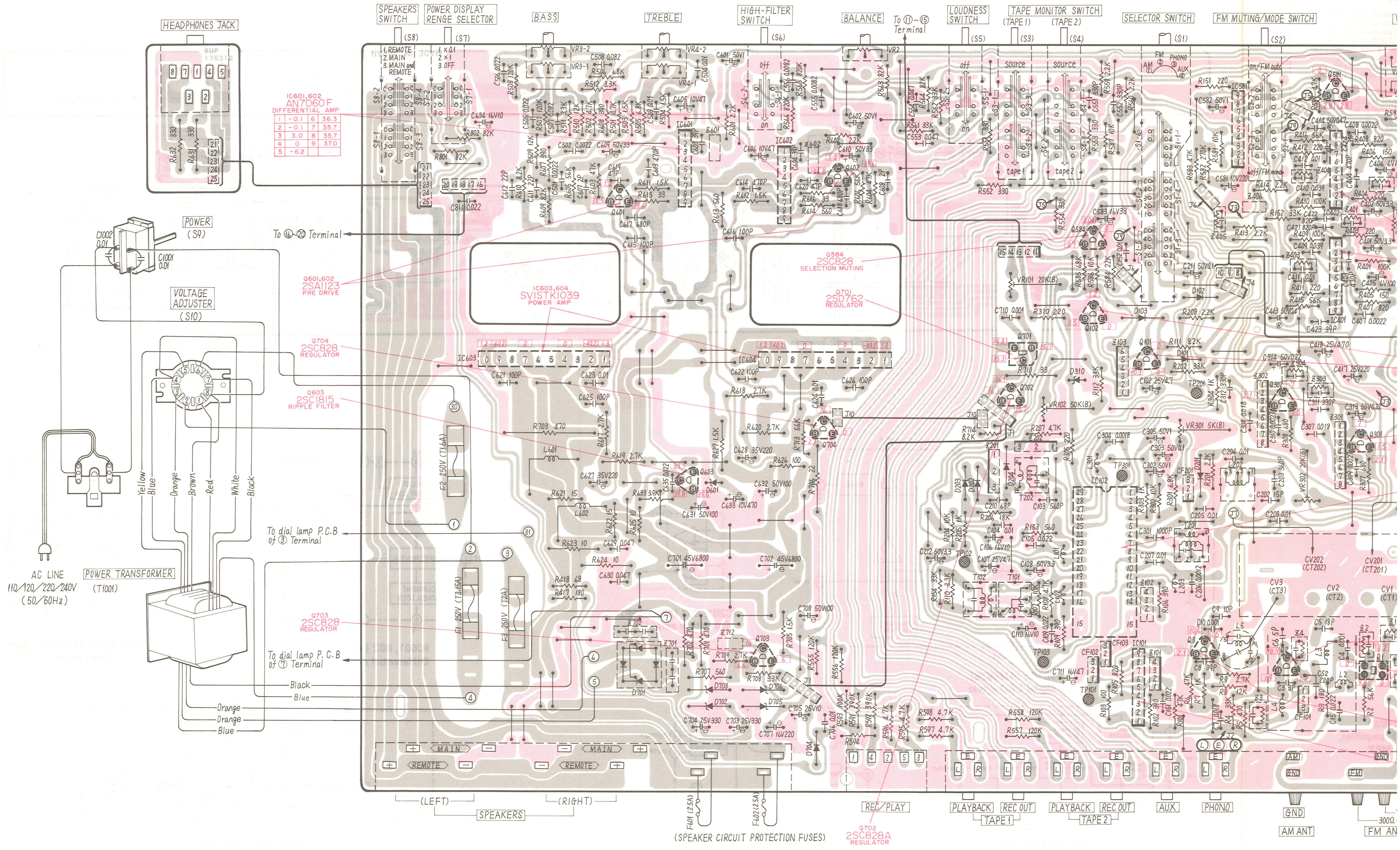
IC581 (AN 6136)
AF muting amplifier


LED5
LED4
LED3
LED2
LED1
OUTPUT AMP
DRIVER
DIFFEREN-TIAL AMP
Vcc
REGULA-TOR
⑧ INPUT

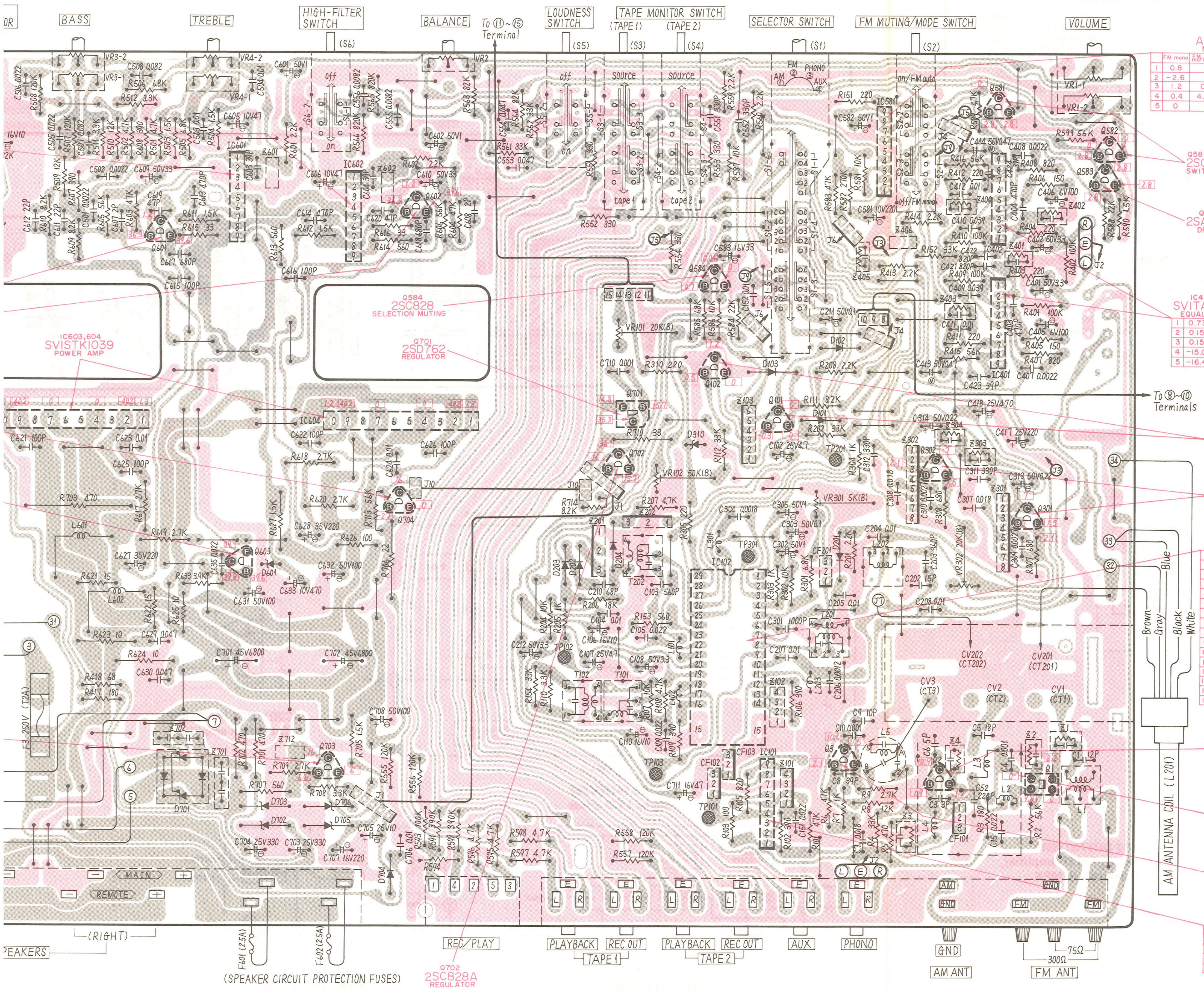
IC801, 802 (AN6875)
LED Comparator

■ PRINTED CIRCUIT BOARD WIRING VIEW

🟥 Earth (Ground) Lines


HEADPHONES JACK
SPEAKERS SWITCH (S8)
1. REMOTE
2. MAIN
3. MAIN and REMOTE
POWER DISPLAY RENGE SELECTOR (S7)
1. ×0.1
2. ×1
3. OFF
BASS
TREBLE
HIGH-FILTER SWITCH (S6)
BALANCE
To ⑪~⑮ Terminal
LOUDNESS SWITCH (S5)
TAPE MONITOR SWITCH (TAPE 1) (S3) (TAPE 2) (S4)
SELECTOR SWITCH (S1)
FM MUTING/MODE SWITCH (S2)
IC601,602
AN7060F
DIFFERENTIAL AMP
1 -0.1 6 36.3
2 -0.1 7 35.7
3 3.0 8 35.7
4 0 9 37.0
5 -6.2
POWER (S9)
C1002 0.01
C1001 0.01
To ⑯-⑳ Terminal
Q601,602
2SA1123
PRE DRIVE
IC603,604
SVI STK1039
POWER AMP
Q584
2SC828
SELECTION MUTING
Q701
2SD762
REGULATOR
VOLTAGE ADJUSTER (S10)
Q704
2SC828
REGULATOR
Q603
2SC1815
RIPPLE FILTER
F2 250V (T1.6A)
F1 250V (T3.15A)
F3 250V (T2A)
Yellow
Blue
Orange
Brown
Red
White
Black
To dial lamp P.C.B of ③ Terminal
AC LINE
110/120/220/240V
(50/60Hz)
POWER TRANSFORMER (T1001)
Q703
2SC828
REGULATOR
To dial lamp P.C.B of ⑦ Terminal
Black
Blue
Orange
Orange
Blue
MAIN
REMOTE
(LEFT)
(RIGHT)
SPEAKERS
F601 (2.5A)
F602 (2.5A)
(SPEAKER CIRCUIT PROTECTION FUSES)
REC/PLAY
Q702
2SC828A
REGULATOR
PLAYBACK
REC OUT
TAPE 1
PLAYBACK
REC OUT
TAPE 2
AUX
PHONO
GND
AM ANT
300Ω
FM AN

▨ Earth (Ground) Lines


BASS
TREBLE
HIGH-FILTER SWITCH (S6)
BALANCE
To ①~⑮ Terminal
LOUDNESS SWITCH (S5)
TAPE MONITOR SWITCH (TAPE 1) (S3) (TAPE 2) (S4)
SELECTOR SWITCH (S1)
FM MUTING/MODE SWITCH (S2)
VOLUME
To ⑧~⑩ Terminals
Q581,582 2SC828 SWITCHING
Q583 2SA564 DRIVER
Q584 2SC828 SELECTION MUTING
Q701 2SD762 REGULATOR
IC603,604 SVISTK1039 POWER AMP
Q101,102 2SC828 SWITCHING
Q301,302 2SC1684 AF AMP
Q2 2SC1047 MIXER
Q1 3SK73 FM RF AMP
Q3 2SC1675 FM LOCAL OSC
Q702 2SC828A REGULATOR
Brown
Gray
Black
White
Blue
AM ANTENNA COIL (L201)
MAIN
REMOTE
(RIGHT)
SPEAKERS
F601 (2.5A)
F602 (2.5A)
(SPEAKER CIRCUIT PROTECTION FUSES)
REC/PLAY
PLAYBACK
REC OUT
TAPE 1
TAPE 2
AUX
PHONO
GND
AM ANT
75Ω
300Ω
FM ANT
F3 250V (T2A)

IC581
AN6136
MUTING

	FM mono	FM muting		FM mono	FM muting
1	0.8		6	-0.2	0
2	-2.6		7	2.8	0
3	1.2	0	8	0	1.2
4	0.4	4.0	9	11.7	
5	0				

IC401,402
SVITA7322P
EQUALIZER AMP

1	0.73	6	—
2	0.15	7	-0.04
3	0.15	8	-10.8
4	-15.0	9	17.6
5	-16.4		

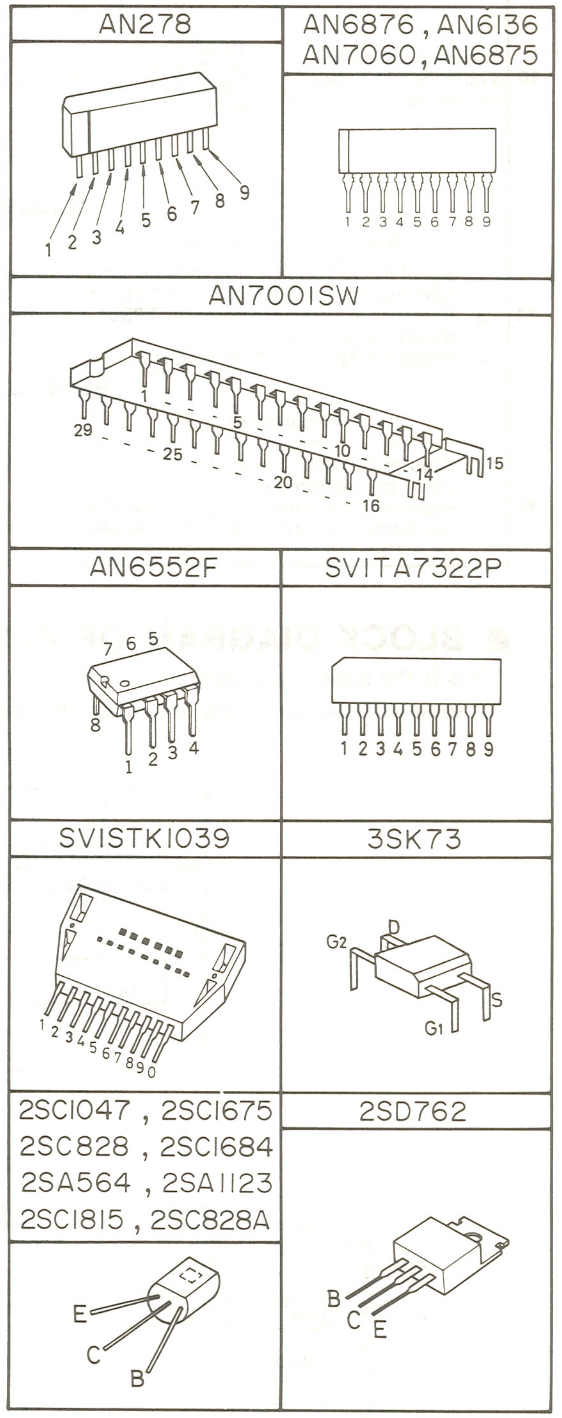
IC102
AN7001SW
FM IF/MPX, AM RF/IF

	FM	AM		FM	AM
1	10.6	11.2	16	5.8	5.8
2	3.9	3.9	17	5.8	5.8
3	5.0	5.4	18	5.8	5.8
4	2.4	1.9	19	5.8	5.8
5	2.4	0.6	20	0.6	0.6
6	5.3	3.2	21	4.5	4.6
7	0.9	11.9	22	11.9	11.9
8	2.7	11.3	23	3.1	0
9	5.8	5.8	24	11.4	11.4
10	3.3	6.2	25	6.8	7.0
11	0	1.1	26	2.3	2.3
12	3.9	3.7	27	3.4	3.6
13	3.9	0	28	3.4	3.6
14	3.9	3.7	29	0	0
15	0	0			

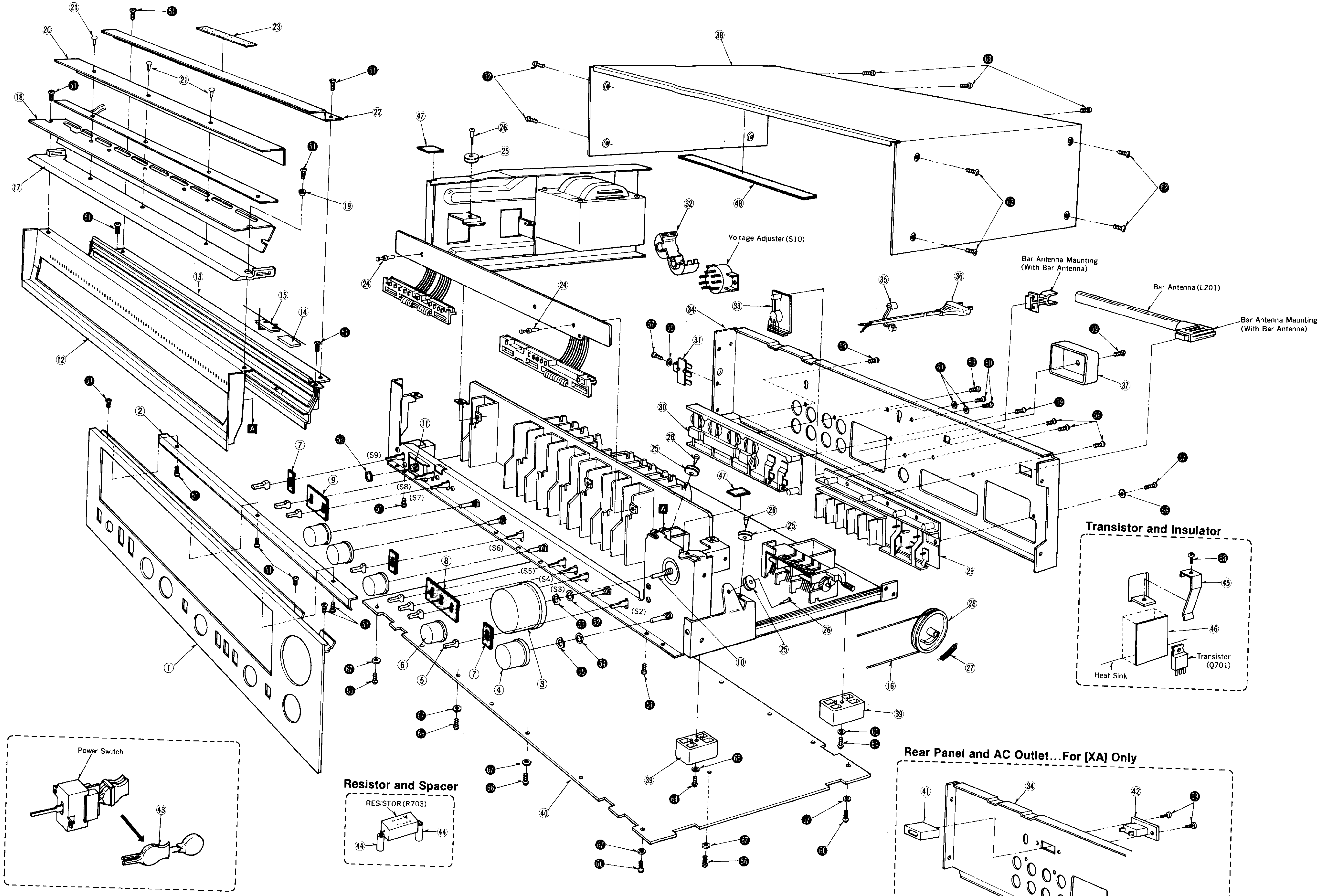
IC101
AN278
1st, 2nd, 3rd IF AMP

1	4.7	6	5.9
2	4.7	7	0
3	5.0	8	5.0
4	5.9	9	5.7
5	10.3		

■ TERMINAL GUIDE OF TRANSISTORS AND IC'S


AN278
1 2 3 4 5 6 7 8 9
AN6876, AN6136
AN7060, AN6875
1 2 3 4 5 6 7 8 9
AN7001SW
29
25
20
16
15
14
10
5
1
AN6552F
7 6 5
8
1 2 3 4
SVITA7322P
1 2 3 4 5 6 7 8 9
SVISTK1039
1 2 3 4 5 6 7 8 9 0
3SK73
G2
D
S
G1
2SC1047, 2SC1675
2SC828, 2SC1684
2SA564, 2SA1123
2SC1815, 2SC828A
E
C
B
2SD762
B
C
E

■ EXPLODED VIEW


Voltage Adjuster (S10)
Bar Antenna Maunting (With Bar Antenna)
Bar Antenna (L201)
Bar Antenna Maunting (With Bar Antenna)
(S9)
(S8)
(S7)
(S6)
(S5)
(S4)
(S3)
(S2)
A
A
Transistor and Insulator
Heat Sink
Transistor (Q701)
Rear Panel and AC Outlet...For [XA] Only
Resistor and Spacer
RESISTOR (R703)
Power Switch

■ REPLACEMENT PARTS LIST...Cabinet, Chassis and Paking Parts

Notes:

1. Part numbers are indicated on most mechanical parts Please ust this part number of rparts orders.
2. ⚠ indicates that only parts specified by the manufacturer be used for safety.
3. K marked parts are used for black type only, while ○-marked parts are for silver type only.
4. Parts other than K-and ○-marked are used for both black and silver types.
5. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

Ref. No.		Part No.	Part Name & Description
		CABINET and CHASSIS PARTS	
1	○	SGWA303D	Panel, Front Ass'Y
1	K	SGWA303KD	Panel, Front Ass'y (Black)
2	○	SDH491	Bracket, Front Panel
2	K	SDH491–1	Bracket, Front Panel (Black)
3	○	SBN881–1	Knob, Tuning
3	K	SBN881–2	Knob, Tuning (Black)
4	○	SBN885–1	Knob, Volume
4	K	SBN885–2	Knob, Volume (Black)
5	○	SBD29	Knob, Lever Switches
5	K	SBD29–1	Knob, Lever Switches (Black)
6	○	SBN887–1	Knob, Selector, Balance, Treble and Bass
6	K	SBN887–2	Knob, Selector, Balance, Treble and Bass (Black)
7		SHS2425	Fiber, Lever Switches
8		SHS2429	Fiber, Lever Switches
9		SHS2427	Fiber, Lever Switches
10		SDT8061	Shaft, Tuning
11		XCJS6P21E–A	Jack, Headphones
12	○	SKD3790	Plate, Dial
12	K	SKD3792	Plate, Dial (Black)
13		SXE889	Escutcheon, Dial Plate Ass'Y
14		SDA81	Sheet, Pointer Slider
15		SDP1143	Pointer, Dial
16		SDZ051–2	Cord, Dial 180 cm (70-15/16")
17		SDL23	Reflector Plate
18		SHP9293	Reflector Paper
19		SHR9339	Spacer, Reflector Plate Screw
20		SHP9311	Reflector Paper
21		SHRA916–2	Lock Pin, Dial Lamp Printed Circuit Board M'tg
22		SUV455	Cover, Dial Pointer
23		SHS1013	Fiber, Shading Cloth
24		SHR401–1	Lock Pin, Power Level and Signal Indicator Printed Circuit Board M'tg
25		**RDR8–1**	Pulley, Dial Cord
26		SHD3X1F	Screw, Pulley M'tg
27		SDSA4121	Spring, Dial Cord
28		SDD47–1	Drum, Variable Capacitor
29		SJF8017	Terminal, Input & Antenna
30		SJF8021–1	Terminal, Speakers
31		SJR205	Terminal Strip, 2P (Except Product for [XA])
32		SUV453	Cover, Voltage Adjuster
33		SJS6511	Socket, DIN (REC/PLAY)
34 [E]		SGP2050–1A	Rear Panel
34 [XGH, EG]		SGPA303K	Rear Panel, SGP2050-1A with Name Plate (SGT21830)
34[XA]		SGP2050–2A	Rear Panel
34[XAL]		SGP2050–3A	Rear Panel
35		SFSR4N4	Bushing, AC Cord (Product Part No. SHR127)
35[XAL]only		SFSR5N4	Bushing, AC Cord (Product Part No. SHR129)
36	⚠	RJA23ZC	AC Cord, Power Source
36[XAL]only	⚠	QFC1207M	AC Cord, Power Source
37		SUV337	Cover, Speaker Fuses
38	○	SKC250H	Cabinet
38	K	SKC250B	Cabinet (Black)
39		SKL237	Foot, Set
40		SYUA303D	Bottom Board
41[XA]only		SMX13	Cover, AC Outlet
42[XA]only	⚠	SJS9205–1	Sock, AC Outlet
43		SMXA65	Cover, Capacitor
44		SMX51	Spacer, Resistor
45		SUS181	Bracket, Transistor M'tg
46		SMX181	Insulator, Transistor
47		SHP643	Fiber, Front Panel Cushion
48		SHS1013	Fiber, Cabinet
		SCREWS, WASHER and NUTS	
●		XTB3+10BFN	Screw, Tapping, ⊕ 3 x 10
●		XWV11	Washer, Spring ϕ 11
●		XNS11	Nut, M11
●		XWV8	Washer, Spring ϕ8
●		XNS8	Nut, M8
●		XNS12	Nut, M12
●		XTB3+8BFZ	Screw, Tapping ⊕ 3 x 8
●		XWC3B	Washer, Toothed, ϕ3
●		XTB3+10BFZ	Screw, Tapping ⊕ 3 x 10
●		XSN3+6BVS	Screw, ⊕ 3 x 6
●		XWA3BFZ	Washer, Spring ϕ3
●	○	XTB4+8BFN	Screw, Tapping, ⊕ 4 x 8
●	K	XTB4+8BFZ	Screw, Tapping ⊕ 4 x 8
●	○	XTB3+8BFZ	Screw, Tapping, + 3 x 8
●	K	XTB3+8BFZ	Screw, Tapping, + 3 x 8
●		XTV3+10BFN	Screw, Tapping, + 3 x 10
●		XWG3	Washer, Plain ϕ3
●		XTV3+12BFN	Screw, Tapping + 3 x 12
●		XWG3	Washer, Plain ϕ3
●		XTB3+8BFN	Screw, Tapping + 3 x 8
●[XA] only		XTN3+8BFZ	Screw, Tapping + 3 x 8
		ACCESSORIES	
A1		SSA267	Cord, FM Indoor Antenna
A2	⚠	XBA2C25SS0	Fuse, 2.5A (250V) Speaker Circuit Protection
A3[XA]only		SJP5213-1	Plug Adapter, AC Power
		PACKING PARTS	
P1		SPP649	Polyethylene Bag
P2		SPS2535	Pad, Left Side
P2[XAL]only		SPS2535-1	Pad, Left Side
P3		SPS2537	Pad, Right Side
P3[XAL]only		SPS2537-1	Pad, Right Side
P4[E, EG]	○	SPG2385	Carton Box
P4[E, EG]	K	SPG2387	Carton Box
P5[XGH, XA]		SPG2387	Carton Box
P6[XAL]		SPG2389	Carton Box
P7		SQF10289	Instructions Book, Printed Matter
P7[XA]only		SQF10485	Instructions Book, Printed Matter

■ REPLACEMENT PARTS LIST ...... Electrical Parts

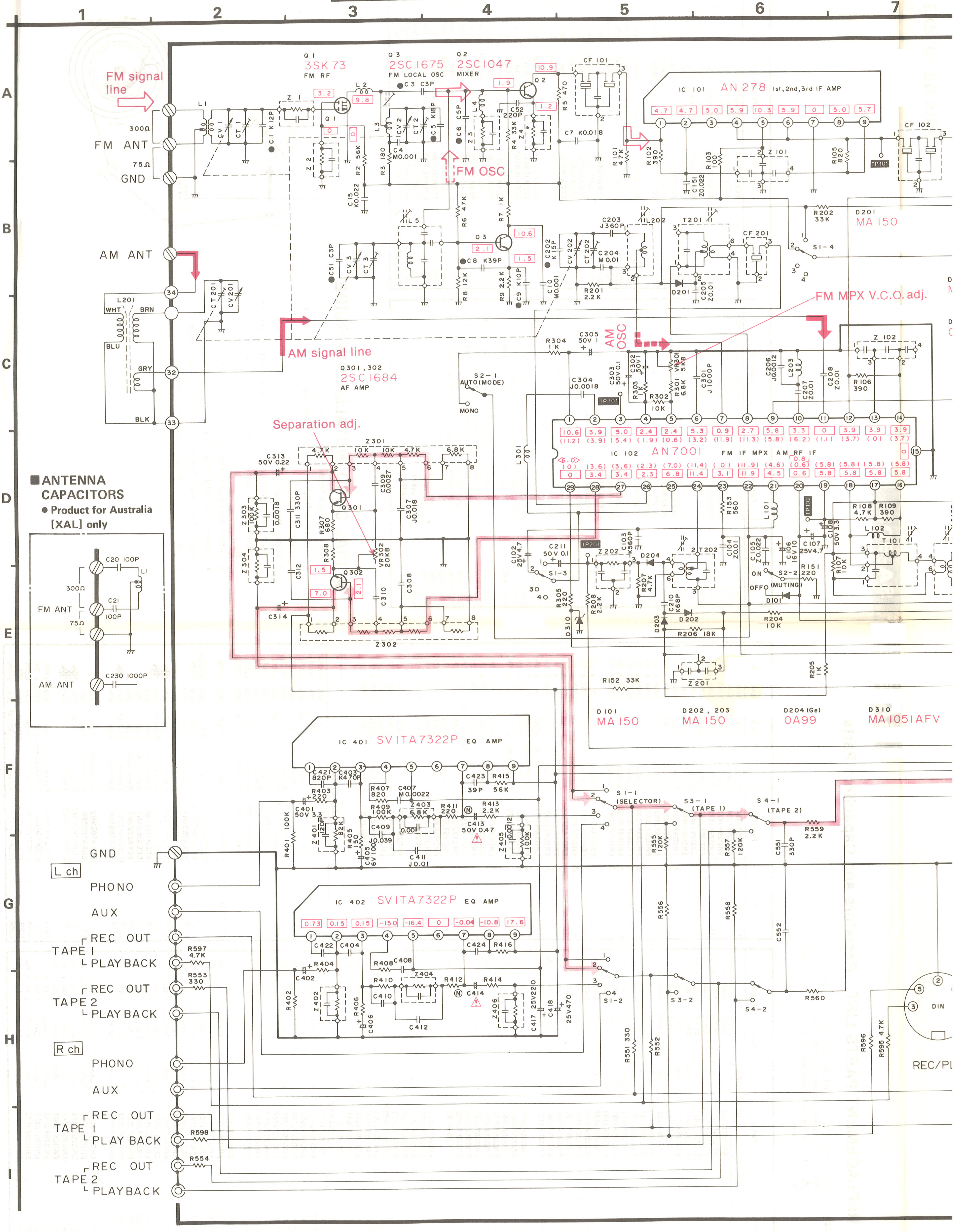
Ref. No.		Part No.	Part Name & Description
		INTEGRATED CIRCUITS	
IC101		AN278	IC, FM IF Amplifier
IC102		AN7001SW	IC, AM Converter,FM IF,Detector & MPX
IC103		AN6876	IC, Signal LED Driver
IC201, 803		AN6552F	IC, Operation Amplifier
IC401, 402		SVITA7322P	IC, Eqvalizer Amplifier
IC581		AN6136	IC, AF Muting Amplifier
IC601, 602		AN7060F	IC, Drive Amplifier
IC603, 604		SVISTK1039	IC, Power Amplifier
IC801, 802		AN6875	IC, LED Comparator
		TRANSISTORS	
Q1		3SK73–GR	Transistor, FM RF Amplifier
Q2		2SC1047–D	Transistor, FM Mixer
Q3		2SC1675–L1	Transistor, FM Local Osillator
Q101, 102, 103, 581, 582, 584, 703, 704, 803, 804		**2SC1328–T**	Transistor, Driver, Switching, Regulator & Buffer
Q301, 302		2SC1684–R	Transistor, AF Amplifier
Q583		**2SA666AI–R**	Transistor, Switching
Q601, 602		2SA1123–R	Transistor, Pre-Drive Amplifier
Q603		2SC1815–GR	Transistor, Regulator
Q701		2SD762–O	Transistor, Regulator
Q702		**2SC1328–T**	Transistor, Regulator
		DIODES	
D101, 102, 202 203, 704		**MA162A**	Diode, FM Detector, AM Detector, Bias & Switching
D103, 204		**2-OA99**	Diode, AM Detector & Bias
D104, 201, 802, 804		**MA162A**	Diode, Detector
D105, 106, 810		LN224RP	Diode, Tuning, Signal strength & Power Level Indicator
D107∼111, 805∼809, 811∼815		LN424YP	Diode, FM Stereo & Power Level Indicator
D310		**MA1051**	Diode, 5.1V Zener
D601		**RVDRD6R2EB**	Diode, 6.2 V Zener
D701	⚠	SVDS4VB10	Rectifier
D702, 703		MA2180B	Diode, 8V Zener
D705		MA2120A	Diode, 2V Zener
D706		**RVDEQA0106S**	Diode, 6V Zener
D801, 803,		**MA162A**	Diode, Detector
		COILS and TRANSFORMERS	
L1		SLA4N15	Coil, FM Antenna
L2		**RLQY25S2**	Coil, Choke
L3		SLD4P13	Coil, FM RF Detector
L4		**RLQY15G5-Y**	Coil, Choke
L5		SLO4P63-P	Coil, FM Oscillator
L101		SLQX471-M	Coil Choke
L102		SLQX180-2	Coil, Choke
L201		SLF2D61	Coil, AM Antenna
L202		SLO2C17	Coil, AM Osillator
L203		SLQX101-3M	Coil, Choke
L301		SLQX393-1Z	Coil, Choke
L601, 602		SLQY15G-3P	Coil, Choke
L801, 802, 803		SLQX101-3M	Coil, Choke
T101		SLI4C515	Transformer, FM IF
T102		SLI4C517	Transformer, Discriminator
T201		SLI2C129R-M	Transformer, AM IF
T202		SLI2C413R	Transformer, AM IF
T1001 [Other Areas]	⚠	SLT5P169-W	Transformer, Power Source
T1001 [XAL] only	⚠	SLT5P167-W	Transformer, Power Source
		CERAMIC FILTERS	
CF101, 102, 103		SVFE107MM-A SVFE107MM-B SVFE107MM-C SVFE107MM-D SVFE107MM-E	Ceramic Filter, 10.70 MHz (Red) Ceramic Filter, 10.68 MHz (Blue) Ceramic Filter, 10.72 MHz (Orange) Ceramic Filter, 10.66 MHz (Brown) Ceramic Filter, 10.74 MHz (Grey)
		(Use pair ranks as same as CF101, 102 and 103)	
CF201		SVFSFU450B3	Ceramic Filter, AM 457 kHz
		VARIABLE RESISTORS	
VR1		EWF2F25BF5S	Volume Control, 250kΩ(B)
VR2		EVH64F25G25S	Balance Control, 200kΩ (W)
VR3		EWK33F25C15S	Treble Control, 100kΩ (C)
VR4		EWK34F25C15S	Bass Control, 100kΩ (C)
VR101, 302		**EVLS3AA00B24**	Signal Level & PLL MPX VCO Adjustment 20kΩ (B)
VR102		**EVLS3AA00B54**	FM Muting Level Adjustment 50kΩ(B)
VR301		EVTS3MA00B53	Separation Adjustment, 5kΩ (B)
		COMPONENT COMBINATIONS	
Z1		EXRP220K104C	Component Combination, 100kΩ & 22pF
Z2		EXRP102Z223C	Component Combination, 22kΩ & 0.001μF
Z3		EXRP181K682C	Component Combination, 6.8kΩ & 180pF
Z4		EXRP103P102C	Component Combination, 1kΩ & 0.01μF
Z101		EXF3YL01C	Component Combination, 0.01μF (X3)
Z102		EXF3SL04C	Component Combination, 0.01μF (X3)
Z103		EXBH85071K	Component Combination,70Ω (X5)
Z201, 701, 702		EXRFS203ZS	Component Combination, 0.01μF (X2)
Z202		EXRF203Z471S	Component Combination, 470Ω & 0.02μF
Z301, 302		EXBH85063K	Component Combination, 6KΩ (X5)
Z303, 304		EXRP182K104C	Component Combination, 100kΩ & 0.0018μF
Z401, 402		EXRP121K823C	Component Combination, 82kΩ & 120pF
Z403, 404		EXRP102K682C	Component Combination, 6.8kΩ & 0.001μF
Z405, 406		EXRP122K104C	Component Combination, 100kΩ & 0.0012μF
Z601, 602		EXRP390K104C	Component Combination, 100kΩ & 39pF
		VARIABLE CAPACITOR	
CV1, 2, 3, 201, 202 (CT1, 2, 3, 201, 202)		ECV5MD34X71G	Tuning, Gang, FM & AM (with Trimmer)
		FUSES	
F1	⚠	XBA2C31TR0	Fuse, T3.15A (250V) Power Source
F2	⚠	XBA2C16TR0	Fuse, T1.6A (250V) Power Source
F3	⚠	XBA2C20TR0	Fuse, T2A (250V) Power Source
F601, 602	⚠	XBA2C25SS0	Fuse, 2.5A (250V) Speaker Circuit
		SWITCHES	
S1		SSR147	Switch, Selector
S2		SSL155	Switch, FM Muting / Mode
S3, 4		SSL153	Switch, Tape Monitor
S5, 6		SSL149	Switch, Loudness & High-Filter
S7		SSL151	Switch, Power display range selector
S8		SSL163	Switch, Speakers Selector
S9	⚠	ESL21210S	Switch, Power Source
S10	⚠	ESE37200	Switch, Voltage Adjuster
		LAMPS	
PL1 ∼ 10	⚠	XAMR68S8	Lamp, Dial, 80mA (8V)

Arears:

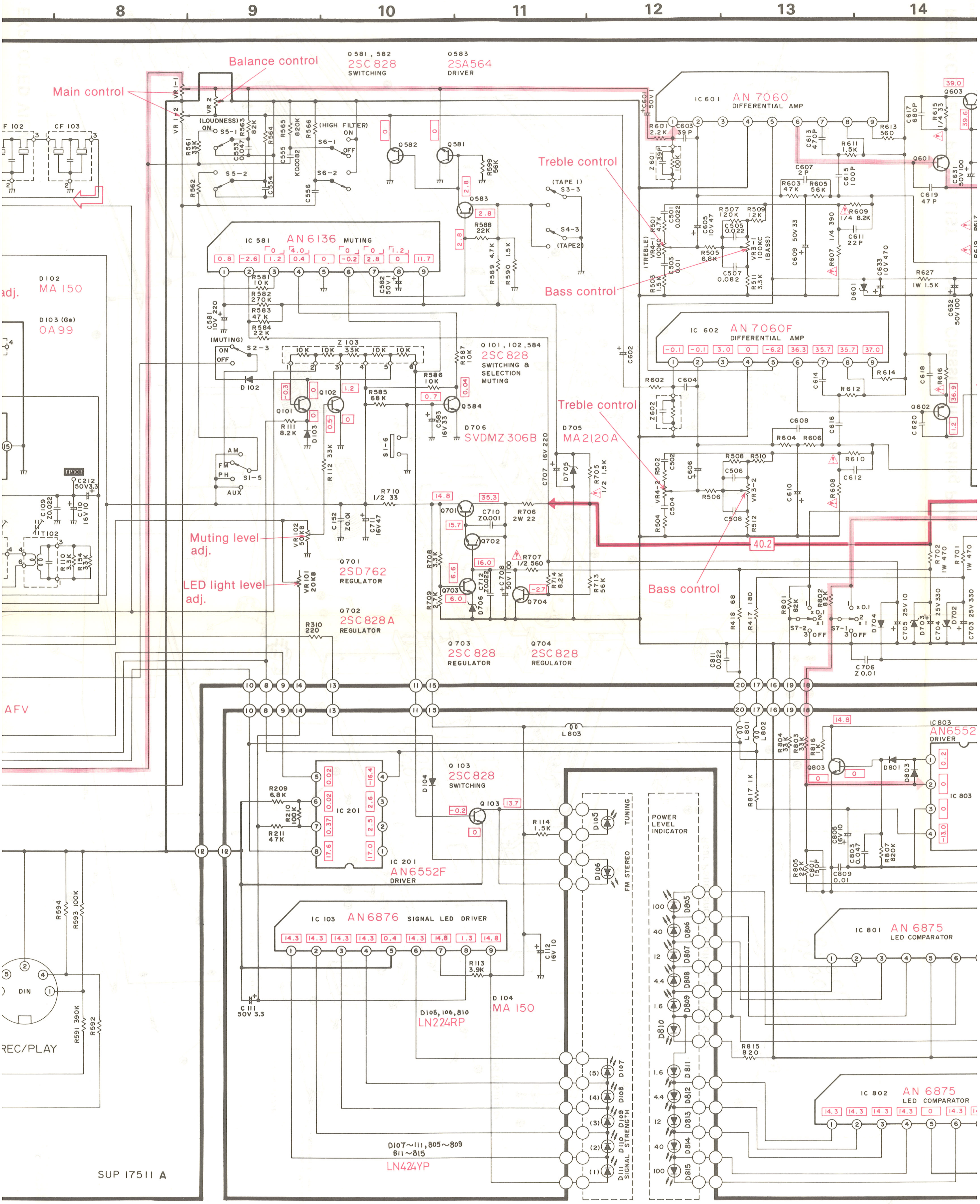
1. [E] and [EG] are available in Scandinavia and European.
2. [XGH] is available in Holland.
3. [XA] is available in Asia, Latin America, Middle East and Africa.
4. [XAL] is available in Australia.

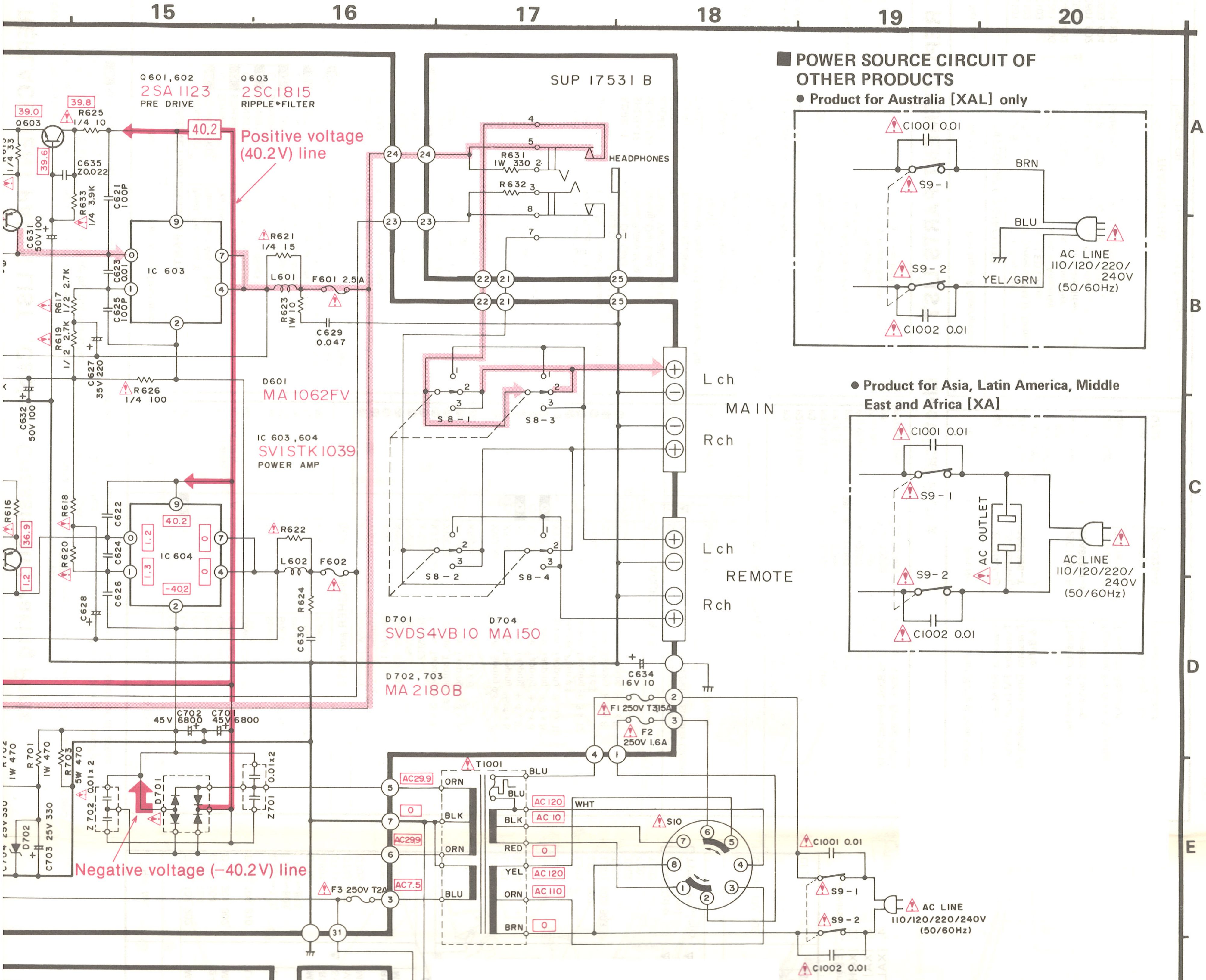
■ SCHEMATIC DIAGRAM ...... MODEL SA-303

(This schematic diagram may be modified at any time with the development of new tech


1
2
3
4
5
6
7
A
B
C
D
E
F
G
H
I
FM signal line
FM ANT
300Ω
75Ω
GND
AM ANT
L201
WHT
BRN
BLU
GRY
BLK
Q1 3SK73 FM RF
Q3 2SC1675 FM LOCAL OSC
Q2 2SC1047 MIXER
FM OSC
IC 101 AN278 1st,2nd,3rd IF AMP
CF 101
CF 102
CF 201
T201
L202
D201 MA150
S1-4
AM signal line
AM OSC
FM MPX V.C.O. adj.
Q301, 302 2SC1684 AF AMP
S2-1 AUTO(MODE)
MONO
Separation adj.
IC 102 AN7001 FM IF MPX AM RF IF
Z301
Z302
Z201
Z202
T202
T101
VR301
VR302 20KB
S1-3
S2-2 (MUTING)
ON
OFF
D101
D202
D203
D204
D310
D101 MA150
D202, 203 MA150
D204 (Ge) OA99
D310 MA1051AFV
■ANTENNA CAPACITORS
● Product for Australia [XAL] only
C20 100P
C21 100P
C230 1000P
IC 401 SVITA7322P EQ AMP
IC 402 SVITA7322P EQ AMP
S1-1 (SELECTOR)
S3-1 (TAPE 1)
S4-1 (TAPE 2)
S1-2
S3-2
S4-2
L ch
R ch
GND
PHONO
AUX
TAPE 1
REC OUT
PLAY BACK
TAPE 2
REC OUT
PLAY BACK
DIN
REC/PL

ew technology.)


8
9
10
11
12
13
14
Balance control
Main control
Q581, 582
2SC828
SWITCHING
Q583
2SA564
DRIVER
IC601 AN7060
DIFFERENTIAL AMP
Treble control
Bass control
IC581 AN6136 MUTING
IC602 AN7060F
DIFFERENTIAL AMP
Q101, 102, 584
2SC828
SWITCHING & SELECTION MUTING
D706
SVDMZ 306B
D705
MA2120A
Treble control
Muting level adj.
LED light level adj.
Q701
2SD762
REGULATOR
Q702
2SC828A
REGULATOR
Q703
2SC828
REGULATOR
Q704
2SC828
REGULATOR
Bass control
D102
MA150
D103 (Ge)
OA99
adj.
AFV
CF102
CF103
(LOUDNESS)
(HIGH FILTER)
(TAPE 1)
(TAPE 2)
(MUTING)
AM
FM
PH
AUX
Q103
2SC828
SWITCHING
IC201
AN6552F
DRIVER
IC103 AN6876 SIGNAL LED DRIVER
D104
MA150
D105, 106, 810
LN224RP
D107~111, 805~809
811~815
LN424YP
TUNING
FM STEREO
SIGNAL STRENGTH
POWER LEVEL INDICATOR
IC803
AN6552
DRIVER
IC801 AN6875
LED COMPARATOR
IC802 AN6875
LED COMPARATOR
DIN
REC/PLAY
SUP 17511 A
39.0
39.6
40.2
36.9
35.3
14.8
15.7
16.0
6.6
6.0
-2.7
13.7
-0.2
14.3
0.4
1.3


15
16
17
18
19
20
A
B
C
D
E
Q601,602
2SA1123
PRE DRIVE
Q603
2SC1815
RIPPLE FILTER
Positive voltage (40.2V) line
40.2
39.0
39.8
39.6
R625 1/4 10
C635 Z0.022
R633 1/4 3.9K
C621 100P
C631 50V100
IC 603
C623 0.01
C625 100P
R617 1/2 2.7K
R619 1/2 2.7K
C627 35V 220
R626 1/4 100
C632 50V 100
R621 1/4 15
L601
F601 2.5A
R623 1W 10
C629 0.047
D601
MA1062FV
IC 603,604
SVI STK1039
POWER AMP
R616
R618
R620
C622
C624
C626
C628
36.9
1.2
IC 604
40.2
-40.2
R622
L602
F602
R624
C630
SUP 17531 B
R631 1W 330
R632
HEADPHONES
S8-1
S8-2
S8-3
S8-4
L ch
MAIN
R ch
L ch
REMOTE
R ch
D701
SVDS4VB10
D704
MA150
D702,703
MA2180B
C634 16V 10
C702 45V 6800
C701 45V 6800
R701 1W 470
R702 1W 470
R703 5W 470
C703 25V 330
C704 25V 330
Z702 0.01x2
Z701 0.01x2
D702
D701
Negative voltage (-40.2V) line
F1 250V T3.15A
F2 250V 1.6A
F3 250V T2A
T1001
ORN
BLU
BLK
ORN
BLU
RED
YEL
ORN
BRN
WHT
AC29.9
0
AC29.9
AC7.5
AC120
AC10
0
AC120
AC110
0
S10
C1001 0.01
S9-1
S9-2
AC LINE
110/120/220/240V
(50/60Hz)
C1002 0.01

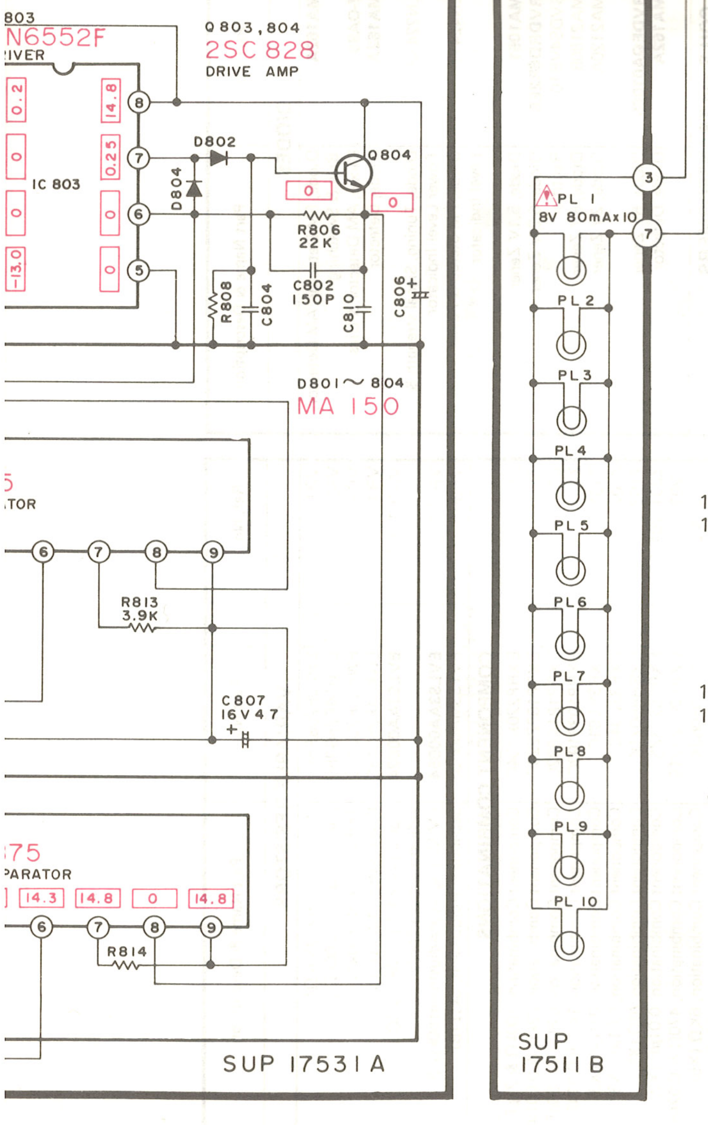
POWER SOURCE CIRCUIT OF OTHER PRODUCTS

- **Product for Australia [XAL] only**

C1001 0.01
S9-1
BRN
BLU
AC LINE
110/120/220/240V
(50/60Hz)
S9-2
YEL/GRN
C1002 0.01

- **Product for Asia, Latin America, Middle East and Africa [XA]**

C1001 0.01
S9-1
AC OUTLET
AC LINE
110/120/220/240V
(50/60Hz)
S9-2
C1002 0.01

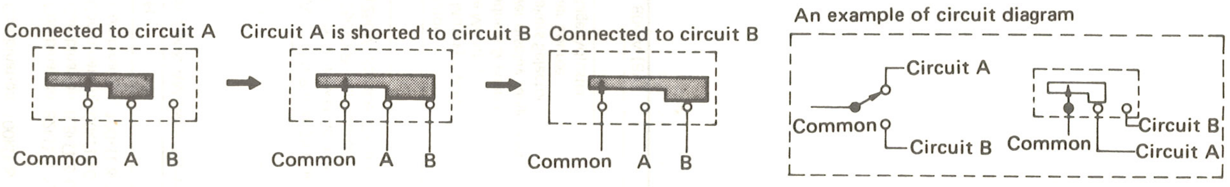

Q803,804
2SC828
DRIVE AMP
N6552F
IC 803
D802
Q804
D804
R806 22K
R808
C804
C802 150P
C810
C806
D801~804
MA150
R813 3.9K
C807 16V47
R814
PL1 8V 80mAx10
PL2
PL3
PL4
PL5
PL6
PL7
PL8
PL9
PL10
SUP 17531 A
SUP 17511 B

Notes:

1. **S1-1 ~ S1-6:** Selector switch in **"FM"** position. ① AM ↔ ② FM ↔ ③ phono ↔ ④ aux
2. **S2-1 ~ S2-3:** FM muting/mode switch in **"on/FM auto"** position.
3. **S3-1 ~ S3-3:** Tape monitor 1 switch in **"source"** position. Source ↔ tape 1
4. **S4-1 ~ S4-3:** Tape monitor 2 switch in **"source"** position. source ↔ tape 2
5. **S5-1, 5-2:** Loudness switch in **"off"** position.
6. **S6-1, 6-2:** High filter switch in **"off"** position.
7. **S7-1, 7-2:** Power display range switch in **"X1"** position ①×0.1 ↔ ②×1 ↔ ③off
8. **S8-1, 8-2:** Speakers selector switch in **"main"** position ① remote ↔ ② main ↔ ③ main and remote
9. **S9:** Power source switch in **"on"** position.
10. **S10:** Voltage adjuster switch in **"240V"** position. 120V ↔ 110V ↔ 220V ↔ 240V
11. Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
    - ▭ Not apply signal to set and muting switch to OFF condition.
    - ( ) AM signal reception.
    - ⌐ ⌐ FM muting to ON condition.
    - ⟨ ⟩ FM stereo signal reception.
12. ⇨ AF signal lines. ⇨ FM signal lines. ➡ AM signal lines.
13. ⚠ indicates that only parts specified by the manufacuturer be used for safety.

Shorting Switch

This unit uses a shorting switch. As illustrated below, the circuit is shorted to the next circuit without being opened. In the circuit diagram, the shaded area represents the common terminal.


Connected to circuit A
Common
A
B
Circuit A is shorted to circuit B
Common
A
B
Connected to circuit B
Common
A
B
An example of circuit diagram
Circuit A
Common
Circuit B
Common
Circuit B
Circuit A

■ REPLACEMENT PARTS LIST...Resistors and Capacitors Parts

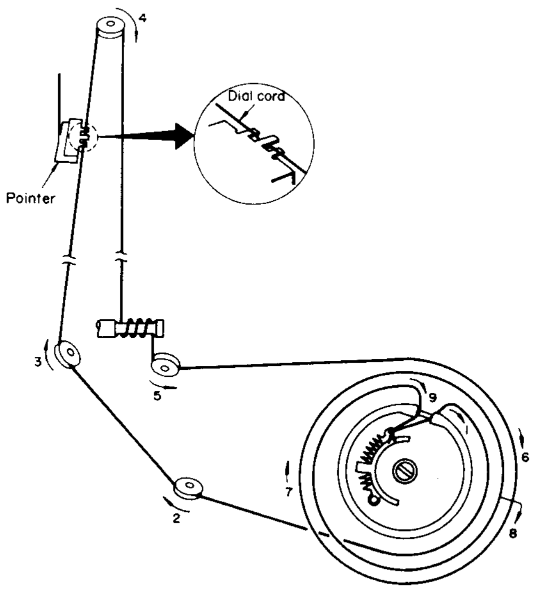
NOTES: 1. Part numbers are indicated on most mechanical parts
Please ust this part number of rparts orders.
2. ⚠ indicates that only parts specified by the manufacturer be used for safety.

Ref. No.		Part No.	Part Name & Description
		RESISTORS	
R2		**ERD25TJ563**	Carbon, 56kΩ, 1/4W, ± 5%
R3		**ERD25FJ181**	Carbon, 180Ω, 1/4W, ± 5%
R4		**ERD25TJ333**	Carbon, 33KΩ, 1/4W, ± 5%
R5		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R6		**ERD25TJ473**	Carbon, 47KΩ, 1/4W, ± 5%
R7		**ERD25FJ102**	Carbon, 1KΩ, 1/4W ± 5%
R8		**ERD25TJ123**	Carbon, 2.7kΩ, 1/4W, ± 5%
R9		**ERD25FJ222**	Carbon, 2.2KΩ, 1/4W, ± 5%
R101		**ERD25TJ473**	Carbon, 47KΩ, 1/4W, ± 5%
R102		**ERD25FJ391**	Carbon, 390Ω, 1/4W, ± 5%
R103		**ERD25FJ101**	Carbon, 100Ω, 1/4W, ± 5%
R105		**ERD25FJ821**	Carbon, 820Ω, 1/4W, ± 5%
R106		**ERD25FJ391**	Carbon, 390Ω, 1/4W, ± 5%
R107		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R108		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
R109		**ERD25FJ391**	Carbon, 390Ω, 1/4W, ± 5%
R110		**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ± 5%
R111		**ERD25FJ822**	Carbon, 8.2kΩ, 1/4W, ± 5%
R112		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R113		**ERD25FJ392**	Carbon, 3.9kΩ, 1/4W, ± 5%
R114		**ERD25FJ152**	Carbon, 1.5kΩ, 1/4W, ± 5%
R151		**ERD25FJ221**	Carbon, 220Ω, 1/4W, ± 5%
R152		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R153		**ERD25FJ561**	Carbon, 560Ω, 1/4W, ± 5%
R154		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R201		**ERD25FJ222**	Carbon, 2.2kΩ, 1/4W, ± 5%
R202		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R204		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R205		**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R206		**ERD25TJ183**	Carbon, 18kΩ, 1/4W, ± 5%
R207		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
R208		**ERD25FJ222**	Carbon, 2.2kΩ, 1/4W, ± 5%
R209		**ERD25FJ682**	Carbon, 6.8kΩ, 1/4W, ± 5%
R210		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R211		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%
R301		**ER025CKF6801**	Metale Film, 6.8kΩ, 1/4W, ± 1%
R302		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R303, 304		**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R305		**ERD25FJ221**	Carbon, 220Ω, 1/4W, ± 5%
R307, 308		**ERD25FJ681**	Carbon, 680Ω, 1/4W, ± 5%
R310		**ERD25FJ221**	Carbon, 220Ω, 1/4W, ± 5%
R401, 402		**ER025CKF1003**	Metal Film, 100kΩ, 1/4W, ± 1%
R403, 404		**ERD25FJ221**	Carbon, 220Ω, 1/4W, ± 5%
R405, 406		**ERD25FJ151**	Carbon, 150Ω, 1/4W, ± 5%
R407, 408		**ERD25FJ821**	Carbon, 820Ω, 1/4W, ± 5%
R409, 410		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R411, 412		**ERD25FJ221**	Carbon, 220Ω, 1/4W, ± 5%
R413, 414		**ERD25FJ222**	Carbon, 2.2KΩ, 1/4W, ± 5%
R415, 416		**ERD25TJ563**	Carbon, 56kΩ, 1/4W, ± 5%
R417		**ERD25FJ181**	Carbon, 180Ω, 1/4W, ± 5%
R418		**ERD25FJ680**	Carbon, 68Ω, 1/4W, ± 5%
R501, 502		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
R503 504		**ERD25FJ152**	Carbon, 1.5kΩ, 1/4W, ± 5%
R505, 506		**ERD25FJ682**	Carbon, 6.8kΩ, 1/4W, ± 5%
R507, 508		**ERD25TJ124**	Carbon, 120kΩ, 1/4W, ± 5%
R509, 510		**ERD25TJ123**	Carbon, 12kΩ, 1/4W, ± 5%
R511, 512		**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ± 5%
R551, 552		**ERD25FJ331**	Carbon, 330Ω, 1/4W, ± 5%
R553, 554		**ERD25FJ331**	Carbon, 330Ω, 1/4W, ± 5%
R555, 556		**ERD25TJ124**	Carbon, 120kΩ, 1/4W, ± 5%
R557, 558		**ERD25TJ124**	Carbon, 120kΩ, 1/4W, ± 5%
R559, 560		**ERD25FJ222**	Carbon, 2.2kΩ, 1/4W, ± 5%
R561, 562		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R563, 564		**ERD25TJ823**	Carbon, 82kΩ, 1/4W, ± 5%
R565, 566		**ERD25TJ824**	Carbon, 820kΩ, 1/4W, ± 5%
R581		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R582		**ERD25TJ274**	Carbon, 270kΩ, 1/4W, ± 5%
R583		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%
R584		**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ± 5%
R585		**ERD25TJ683**	Carbon, 68kΩ, 1/4W, ± 5%
R586, 587		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R588		**ERD25TJ223**	Carbon, 22kΩ, 1/4W. ± 5%
R589		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
R590		**ERD25FJ152**	Carbon, 1.5kΩ, 1/4W, ± 5%
R591, 592		**ERD25TJ394**	Carbon, 390kΩ, 1/4W, ± 5%
R593, 594		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R595, 596		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
R597, 598		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
R599		**ERD25TJ563**	Carbon, 56kΩ, 1/4W, ± 5%
R603, 604,		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%
R605, 606		**ERD25TJ563**	Carbon, 56kΩ, 1/4W, ± 5%
R607, 608	⚠	**ERD25FJ391**	Carbon, 390Ω, 1/4W, ± 5%
R609, 610	⚠	**ERD25FJ822**	Carbon, 8.2kΩ, 1/4W, ± 5%
R611, 612		**ERD25FJ152**	Carbon, 1.5kΩ, 1/4W, ± 5%
R613, 614		**ERD25FJ561**	Carbon, 560Ω, 1/4W. ± 5%
R615 616	⚠	**ERD25FJ330**	Carbon, 33Ω, 1/4W, ± 5%
R617, 618	⚠	**ERD50FJ272**	Carbon, 2.7kΩ, 1/2W, ± 5%
R619, 620	⚠	**ERD50FJ272**	Carbon, 2 7kΩ, 1/2W, ± 5%
R621, 622	⚠	**ERD25FJ150**	Carbon, 15Ω, 1/4W, ± 5%
R623, 624		**ERG1ANJ100**	Metal Oxide, 10Ω, 1W, ± 5%
R625	⚠	**ERD25FJ100**	Carbon, 10Ω, 1/4W, ± 5%
R626	⚠	**ERD25FJ101**	Carbon, 100Ω, 1/4W, ± 5%
R627		**ERG1ANJ152**	Metal Oxide, 1.5kΩ, 1W ± 5%
R631, 632		**ERG1ANJ331**	Metal Oxide, 330Ω, 1W, ± 5%
R633	⚠	**ERD25FJ392**	Carbon, 3.9kΩ, 1/4W, ± 5%
R701, 702		**ERG1ANJ471**	Metal Oxide, 470Ω, 1W ± 5%
R703	⚠	**ERF5SJ471**	Non-Flamable, 470Ω, 2W, ± 5%
R705	⚠	**ERD50FJ152**	Carbon, 1.5kΩ, 1/2W, ± 5%
R706		**ERG2ANJ220**	Metal Oxide, 22Ω, 2W, ± 5%
R707	⚠	**ERD50FJ561**	Carbon, 560Ω, 1/2W, ± 5%
R708		**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ± 5%
R709		**ERD25FJ272**	Carbon, 2.7kΩ, 1/4W, ± 5%
R710		**ERQ12HJ330**	Fuse Type Metallic, 33Ω, 1/2W, ± 5%
R712		**ERC12ZGK335**	Soilde, 3.3MΩ, 1/2W, ±10%
R713		**ERD25TJ563**	Carbon, 56kΩ, 1/4W, ± 5%
R714		**ERD25FJ822**	Carbon, 8.2kΩ, 1/4W, ± 5%
R801, 802		**ERD25TJ823**	Carbon, 82kΩ, 1/4W, ± 5%
R803, 804		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R805, 806		**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ± 5%
R807, 808		**ERD25TJ824**	Carbon, 820kΩ, 1/4W, ± 5%
R813, 814		**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ± 5%
R815		**ERD25FJ821**	Carbon, 820Ω, 1/4W; ± 5%
R816, 817		**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
		CAPACITORS	
C1		ECCD1H120KC	Ceramic, 12pF, 50V, ±10%
C3		ECCD1H030CC	Ceramic, 3pF, 50V, ±0.25pF
C4		ECKD1H102MD	Ceramic, 0.001μF, 50V, ±20%
C5		ECCD1H180KC	Ceramic, 18pF, 50V, ±10%
C6		ECCD1H050CC	Ceramic, 5pF, 50V, ±0.25pF
C7		ECQM1H183KZ	Polyester, 0.018μF, 50V, ±10%
C8		ECCD1H390KC	Ceramic, 39pF, 50V, ±10%
C9		ECCD1H100KC	Ceramic, 10pF, 50V, ±10%
C10		ECKD1H102MD	Ceramic, 0.001μF, 50V, ±20%
C15		ECQM1H223KZ	Polyester, 0.022μF, 50V, ±10%
C20, 21 [XAL] only		ECKDHS101MB	Ceramic, 100pF, 50V, ±20%
C51		ECCD1H030CC	Ceramic, 3pF, 50V, ±0.25pF
C52		ECKD1H221KB	Ceramic, 220pF, 50V, ±10%
C102		**ECEA25Z4R7**	Electrolytic, 4.7μF, 25V
C103		ECKD1H561KB	Ceramic, 560pF, 50V, ±10%
C104		ECKD1H103ZF	Ceramic, 0.01μF, 50V, $^{+80}_{-20}\%$
C105		ECKD1H223ZF	Ceramic, 0.022μF, 50V $^{+80}_{-20}\%$
C106		**ECEA1HS100**	Electrolytic, 10μF, 50V
C107		**ECEA25Z4R7**	Electrolytic, 4.7μF, 25V
C108		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C109		ECKD1H223ZF	Ceramic, 0.022pF, 50V, $^{+80}_{-20}\%$
C110		**ECEA1HS100**	Electrolytic, 10μF, 50V
C111		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C112		**ECEA1HS100**	Electrolytic, 10μF, 50V
C151		ECKD1H223ZF	Ceramic, 0.022μF, 50V, $^{+80}_{-20}\%$
C152		ECKD1H103ZF	Ceramic, 0.01μF, 50V, $^{+80}_{-20}\%$
C202		ECCD1H150KC	Ceramic, 15pF, 50V, ±10%
C203		ECQP1361JZ	Polypropylene, 360pF, 125V, ± 5%
C204		ECKD1H103MD	Ceramic, 0.01μF, 50V, ±20%
C205		ECKD1H103ZF	Ceramic, 0.01μF, 50V $^{+80}_{-20}\%$
C206		ECQM1H122JZ	Polyester, 0.0012μF 50V, ± 5%
C207, 208		ECKD1H103ZF	Ceramic, 0.01μF, 50V $^{+80}_{-20}\%$
C210		ECCD1H680K	Ceramic, 68pF, 50V, ±10%
C211		**ECEA50ZR1**	Electrolytic, 0.1μF, 50V
C212		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C230 [XAL] only		ECKDHS102MD	Ceramic, 1000pF, 50V, ±20%
C301		ECQP1102JZ	Polypropylene, 0.001μF, 125V, ± 5%
C302		**ECEA50Z1**	Electrolytic, 1μF, 50V
C303		**ECEA50ZR1**	Electrolytic, 0.1μF, 50V
C304		ECQM1H182JZ	Polyester, 0.0018μF, 50V ± 5%
C305		**ECEA50Z1**	Electrolytic, 1μF, 50V
C307, 308		ECQM1H273JZ	Polyester, 0.027μF, 50V, ± 5%
C309, 310		ECQM1H272KZ	Polyester, 0.0027μF, 50V, ±10%
C311, 312		ECKD1H331KB	Ceramic, 330pF, 50V, ±10%
C313, 314		**ECEA50ZR22**	Electrolytic, 0.22μF, 50V
C401, 402		**ECEA50M3R3**	Electrolytic, 3.3μF, 50V
C403, 404		ECKD1H471KB	Ceramic, 470pF, 50V, ±10%
C405, 406		**ECEA1AS101**	Electrolytic, 100μF, 10V
C407, 408		ECKD1H222MD	Ceramic, 0.0022μF, 50V, ±20%
C409, 410		ECQM1H393JZ	Polyester, 0.039μF, 50V, ± 5%
C411, 412		ECQM1H103JZ	Polyester, 0.01μF, 50V, ± 5%
C413, 414	⚠	ECEA1HNR47	Non-polar, Electrolytic, 0.47μF, 50V
C417		**ECEA1ES221**	Electrolytic, 220μF, 25V
C418		**ECEA1ES471**	Electrolytic, 470μF, 25V
C421, 422		ECKD1H821KB	Ceramic, 820pF, 50V, ±10%
C423, 424		ECCD1H390K	Ceramic, 39pF, 50V, ±10%
C501, 502		ECQM1H222KZ	Polyester, 0.0022μF, 50V, ±10%
C503, 504		ECQM1H103KZ	Polyester, 0.01μF, 50V, ±10%
C505, 506		ECQM1H223KZ	Polyester, 0.022μF, 50V, ±10%
C507, 508		ECQM1H823KZ	Polyester, 0.082μF, 50V, ±10%
C551, 552		ECKD1H331KB	Ceramic, 330pF, 50V, ±10%
C553, 554		ECQM1H473KZ	Polyester, 0.047μF, 50V, ±10%
C555, 556		ECQM1H822KZ	Polyester, 0.0082μF, 50V, ±10%
C581		**ECEA1AS221**	Electrolytic, 220μF, 10V
C582		**ECEA50Z1**	Electrolytic, 1μF, 50V
C583		**ECEA1CS330**	Electrolytic, 33μF, 16V
C601, 602		ECEA50M1R	Electrolytic, 1μF, 50V
C603, 604		ECCD1H390K	Ceramic, 39pF, 50V, ±10%
C605, 606		**ECEA1AS470**	Electrolytic, 47μF, 10V
C607, 608		ECCD1H020C	Ceramic, 2pF, 50V, ±0.25pF
C609, 610		**ECEA1JS330**	Electrolytic, 33μF, 63V
C611, 612		ECCD1H220K	Ceramic, 22pF, 50V, ±10%
C613, 614		ECKD1H471KB	Ceramic, 470pF, 50V, ±10%
C615, 616		ECKD1H101K	Ceramic, 100pF, 50V, ±10%
C617, 618		ECKD1H681KB	Ceramic, 680pF, 50V, ±10%
C619, 620		ECCD2H470K	Ceramic, 47pF, 500V, ±10%
C621, 622		ECCD2H101K	Ceramic, 100pF, 500V, ±10%
C623, 624		ECKD1H103ZF	Ceramic, 0.01μF, 50V, $^{+80}_{-20}\%$
C625, 626		ECCD2H101K	Ceramic, 100pF, 500V, ±10%
C627, 628		**ECEA1VS221**	Electrolytic, 220μF, 35V
C629,630		ECQM1H473KZ	Polyester, 0.047μF, 50V, ±10%
C631, 632		**ECEA1HS101**	Electrolytic, 100μF, 50V
C633		**ECEA1AS471**	Electrolytic, 470μF, 10V
C634		**ECEA1HS100**	Electrolytic, 10μF, 50V
C635		ECKD1H223ZF	Ceramic, 0.022μF, 50V, $^{+80}_{-20}\%$
C701, 702		ECET45R682YX	Electrolytic, 6800μF, 45V
C703, 704		**ECEA1ES331**	Electrolytic, 330μF, 25V
C705		**ECEA1HS100**	Electrolytic, 10μF, 50V
C706		ECKD1H103ZF	Ceramic, 0.01μF, 50V, $^{+80}_{-20}\%$
C707		**ECEA1CS221**	Electrolytic, 220μF, 16V
C708		**ECEA1HS101**	Electrolytic, 100μF, 50V
C710		ECKD1H102ZF	Ceramic, 0.001μF, 50V, $^{+80}_{-20}\%$
C711		**ECEA1ES470**	Electrolytic, 47μF, 25V
C712		ECKD1H223ZF	Ceramic, 0.022μF, 50V, $^{+80}_{-20}\%$
C801, 802		ECCD1H151K	Ceramic, 150pF, 50V, ±10%
C803, 804		ECQM1H473KZ	Polyester, 0.047μF, 50V, ±10%
C805, 806		**ECEA1HS100**	Electrolytic, 10μF, 50V
C807		**ECEA1ES470**	Electrolytic, 47μF, 25V
C809, 810		ECQM1H103KZ	Polyester, 0.01μF, 50V, ±10%
C811		ECKD1H223ZF	Ceramic, 0.022μF, 50V, $^{+80}_{-20}\%$
C1001, 1002	⚠	ECKDKC103PF	Ceramic, 0.01μF, 125VAC, $^{+100}_{-0}\%$

■ DIAL CORD INSTALLATION GUIDE

* For threading a fresh cord, proceed as follows.

1. Prepare a fresh cord more than 180cm (70-15/16") in length.
2. Bring the variable capacitor into a state where the drum is completely turned to the right (maximum capacity and lowest frequency for the variable capacitor.)
3. Direct the cord in the order from 1 to 10.
4. Stretch the cord in such a tension as the spring length is elongated by 1.5 times that of the original state.
5. Fix the knot of the cord with the adhesive.



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